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Medicaid Redesign Team
Supportive Housing Evaluation

Final Report on Targeting of MRT-SH Services

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Executive Summary

Targeting Report 2 will examine client characteristics, their relationships to one another and their relationship to cost savings relative to a Comparison group in order to determine how NYSDOH might tailor its targeting practices to optimize future cost savings and benefits to participants.

Currently, there is the following prioritization menu that MRT-SH programs are encouraged to use in targeting their services:

- 2 or more hospital inpatient stays
- 5 or more emergency department (ED) visits
- 1 inpatient stay and 4 ED visits
- In top 20% of Medicaid spending
- Health home enrollment or outreach
- Nursing home stay

There are no diagnostic requirements for MRT-SH overall, but specific MRT-SH programs are diagnosis-specific and/or have other eligibility requirements.

This report will help:

1. Determine whether there are ways to simplify the prioritization menu by eliminating redundant criteria;
2. Determine whether certain prioritization criteria are more salient to particular client populations;
3. Determine which prioritization criteria best predict supportive housing effectiveness, and whether this varies by client population;
4. Describe the perspectives offered by program administrators and staff regarding participant subgroups who are benefiting most from supportive housing, as well as those who are most challenging to serve;
5. Summarize the barriers to serving subgroups identified as challenging (e.g., level of need, gaps within the supports currently available, etc.); and
6. Provide policy and practice recommendations on ways to tailor targeting practices to capture those who appear to be benefiting the most.

METHODOLOGY

❯❯ *Part I: Salience and Overlap of Prioritization Criteria*

Part I of the report will address whether redundant criteria in the prioritization menu can be eliminated and whether or not certain criteria are more salient to particular populations using descriptive statistics based on the MRT-SH client sample and a random sample of adult Medicaid users. This will include an analysis of how the composition of different MRT-SH programs would change with modifications to the prioritization criteria.

The analyses in Part I are based on all MRT-SH clients without imposing any continuous coverage restrictions. Participants were included for analysis provided that they were enrolled prior to October 2016. Characteristics of clients meeting these criteria were analyzed over the twelve months prior to program enrollment (the pre-period). There were 6,189 MRT-SH clients examined for the Part I analyses.

These clients were compared with and contrasted to Medicaid clients from a random sample of 49,912 New York State Medicaid users who had claims during the same period. The clients in this random sample constitute a pool from which MRT-SH participants are potentially drawn. Some analyses are further focused on Medicaid clients who appear in the homeless shelter population, as this is a key population to which MRT-SH programs are targeted.

Part II: Variation in Cost Savings Based on Prioritization Criteria

Part II will look at how pre-post changes in spending vary between the Treatment group and a Comparison group and how this in turn would vary based on different prioritization criteria. The Part II analyses are based on the propensity score-matched Treatment and Comparison group samples used for the Cost 2 and Outcomes 2 Volume 2 reports.

The first approach to predicting supportive housing effectiveness uses linear regression to model the effects of various characteristics on pre-post spending changes among MRT-SH clients. The second approach takes the form of a series of regression decompositions. Regression decomposition separates the effect of differential means from the effect of differential parameters for each predictor variable in a regression equation that is run for both groups, and also provides a breakdown of the total effects of different group characteristics versus different relationships between the independent and dependent variables between the two groups. Finally, Part II will conclude with an examination of how treatment effects in the form of pre-post cost savings would vary depending on the implementation different prioritization criteria.

Part III: Stakeholder Feedback

The purpose of the Part III analyses is to synthesize stakeholder feedback to inform targeting practices. Qualitative data from the implementation study are analyzed to determine provider perspectives on groups who are benefiting the most from supportive housing.

KEY FINDINGS

Part I: Salience and Overlap of Prioritization Criteria

- None of these prioritization criteria are a good substitute for any other single criterion, either among clients in the MRT-SH program or in the Medicaid population at large. However, nearly all of the clients who meet the inpatient criteria are captured by at least one other criteria, so that the inclusion of inpatient utilization as a prioritization criteria adds relatively few clients
- People who qualify only because of their health home enrollment are not high-cost or high-utilizing clients. If high-cost, high-utilizing clients are the target group for MRT-SH, this criterion is not effective in capturing them.
- A failure to include clients who only meet the ED criterion under the prioritization menu will bias MRT-SH clients to be more male, more non-Hispanic white, and older. Those captured under the ED criterion only appear to represent a distinct group of high utilizers who meet the definition of a high utilizer but have a different demographic profile from those meeting other criteria and who would not otherwise be captured by the MRT-SH programs.
- Dropping both the health home and inpatient criteria and basing the prioritization menu only on costs and ED visits would not dramatically change the character of the clients currently being served by MRT-SH. This simplified prioritization menu would be a more streamlined way to capture largely the same type of clients, while at the same time trimming out some of those who are less intensive users of resources.
- Using a criteria based on top 20% of spending in the specific population or five or more ED visits would result in substantially smaller percentages eligible for services, but would also result in more acute populations, with higher rates of comorbidities, more inpatient and ED use, and more pre-period spending.
- None of the prioritization criteria analyzed, when applied to the random sample, would produce a sample of potential clients that is comparable to actual MRT-SH clients in average level of costs. This would seem to suggest that programs are either targeting their services to a higher-cost population than the top 20%, or are using other – perhaps more subjective – indicators of need that are correlated in practice with higher spending.

Part II: Variation in Cost Savings Based on Prioritization Criteria

- Many of the items that are part of the current prioritization menu are not significantly associated with more favorable outcomes within any of the diagnostic subgroups or for clients with pre-period shelter stays. Having ED visits or inpatient stays in the pre-period was not associated with a greater decrease in pre-post spending for any

group. Nor was Health Home enrollment. Having a pre-period nursing home stay was associated with a significantly greater decrease in pre-post spending only among clients with a serious mental illness.

- Pre-period costs were significantly associated with decreases in pre-post spending in all groups. The greater decrease in pre-post spending associated with higher pre-period spending for those who received the treatment implies that high-spending clients will benefit more from receiving the program, and that by enrolling more high-spending clients, the program can maximize cost savings.
- Certain client characteristics are associated with greater cost savings for the Treatment group relative to the Comparison group within different client populations.
- In sum, for all subgroups of clients, except those with HIV, the largest cost savings in raw dollars between the Treatment versus the Comparison group would be realized by using the most restrictive prioritization criteria (clients who are either in the top 20% of population-specific costs or have 5 or more ED visits).

❯❯ *Part III: Stakeholder Feedback*

- Findings from the qualitative analysis highlight participant characteristics that providers associate with success in supportive housing. Most providers indicated that there is no one "profile" of individuals who succeed in housing; rather, they noted that it is critical for the supports provided to match the needs of the individual participant, viewing this as essential to success. However, the providers also commonly reported that participants who are most motivated or engaged tend to do best in the program.
- The providers reported that participants who are less motivated or willing to engage in services are the most challenging to serve, and seem to be benefiting the least. Several providers described serious mental illness, active substance abuse, and co-morbid conditions as characteristics that create challenges to effective delivery of supportive housing.

CONCLUSIONS

The implications of these findings for policy depend in large part upon the program priorities. Rather than indicating a clear policy direction, the results of this report suggest some policy questions for further consideration.

1. The program leadership should consider the desired balance between exclusivity and inclusivity. More restrictive prioritization criteria will result in a substantially smaller percentage of the Medicaid population with program-specific diagnoses being prioritized for services. However, the clients who *are* prioritized under the strictest criteria (that involving population-specific cost cutoffs), will result in a higher-spending profile of clients, and these clients tend to experience the greatest cost savings in raw dollars compared to a Comparison group with the same spending profile.
2. Health Home enrollment is one of the current prioritization criteria that could be considered for elimination.
3. Inpatient use is another current prioritization criteria that could be considered for elimination. Nearly all of the clients who would be prioritized based on inpatient use are captured by other criteria.
4. Using a population-specific cost cutoff results in a smaller population of more resource-intensive clients. However, the implementation of such a population-specific cost criterion requires consideration of how to treat that majority of cases where clients belong to more than one diagnostic population.
5. The patterns for the HIV-positive population are substantially different than those for other diagnostic populations, and seem to imply that MRT-SH enrollment results in higher, rather than lower, levels of spending for these clients. Because the recommended therapies for HIV/AIDS are cost-intensive, this may represent a more appropriate level of service utilization for their condition rather than increased morbidity or unnecessary use of services.

Introduction

This report examines the characteristics of the populations currently and potentially served by programs sponsored by the New York State Medicaid Redesign Team's Supportive Housing Initiative (MRT-SH), in order to determine how NYSDOH might tailor its targeting practices to optimize future cost savings and benefits to participants.

Of particular interest are the client characteristics currently used in the prioritization menu to determine program eligibility. These include Medicaid spending, use of inpatient and emergency department services, nursing home care, and Health Home enrollment.

GOALS OF THE MRT-SH INITIATIVE

To address unprecedented health care cost growth and improve health care quality in New York's Medicaid program, Governor Andrew M. Cuomo created the Medicaid Redesign Team to develop a multi-year reform plan. Medicaid Redesign is premised on the idea that the only way to successfully control costs is to improve the health of program participants.

Studies have shown the powerful effects of social determinants of health, such as safe housing, nutrition, and education. However, the public spending dedicated to these social determinants is small relative to national health care spending overall.[1] Research also indicates that 5% of consumers are responsible for 50% of health care costs.[2] In particular, the population targeted for the supportive housing program has high rates of emergency department utilization and inpatient hospitalizations, due in part to their greater likelihood of suffering from multiple chronic medical problems, behavioral health problems, and environmental risk factors associated with a lack of stable housing.

New York has recognized housing as a critical health intervention, with supportive housing identified as a promising model. Supportive housing is affordable housing paired with supportive services, such as on-site case management and referrals to community-based services[3]. As a result, New York has allocated substantial funding from the State's Medicaid Redesign dollars to provide supportive housing to homeless, unstably housed, and/or other individuals with complex needs, who are high-cost, high-need Medicaid users. It is anticipated that MRT-SH will reduce the more expensive forms of health care utilization (emergency department visits, inpatient hospitalizations, and nursing home stays), potentially reduce overall health care costs, and improve quality of life and health outcomes.

GOALS OF THIS REPORT

Targeting Report 2 will examine client characteristics, their relationships to one another and their relationship to cost savings relative to a Comparison group in order to determine how NYSDOH might tailor its targeting practices to optimize future cost savings and benefits to participants.

Currently, there is the following prioritization menu that MRT-SH programs are encouraged to use in targeting their services:

- 2 or more hospital inpatient stays
- 5 or more emergency department (ED) visits
- 1 inpatient stay and 4 ED visits
- In top 20% of Medicaid spending
- Health home enrollment or outreach
- Nursing home stay

[1] Bradley EH, Elkins BR, Herrin J, Elbel B. Health and social services expenditures: associations with health outcomes. *BMJ Quality & Safety*. 2011;20(10):826-831.

[2] Stanton MW, Rutherford MK. The high concentration of U.S. health care expenditures. Rockville (MD): *Agency for Healthcare Research and Quality*; 2005. Research in Action Issue 19. AHRQ Pub. No. 06-0060.

[3] Doran KM, Misa EJ, Shah NR. Housing as Health Care – New York's Boundary-Crossing Experiment. New England Journal of Medicine. 2013;369:2374-2377.

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This report will help:

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5. Summarize the barriers to serving subgroups identified as challenging (e.g., level of need, gaps within the supports currently available, etc.); and
6. Provide policy and practice recommendations on ways to tailor targeting practices to capture those who appear to be benefiting the most.

Part I of the report will address the first two items using descriptive statistics based on the MRT-SH client sample and a random sample of adult Medicaid users. This will include an analysis of how the composition of different MRT-SH programs would change with modifications to the prioritization criteria. Part II will address the third item by looking at how pre-post changes and comparison group differences in key outcomes variables vary by prioritization criteria. Part III will address the fourth and fifth items by synthesizing stakeholder feedback to inform targeting practices. Qualitative data from the implementation study will be analyzed to determine provider perspectives on groups who are benefiting most from supportive housing. The Conclusions will address the final item.

Part I: Salience and Overlap of Prioritization Criteria

Currently, 87% of MRT-SH clients meet at least one of these criteria. MRT-SH clients meet the prioritization criteria as follows:

- 2 or more hospital inpatient stays – 23%
- 5 or more emergency department (ED) visits – 17%
- 1 inpatient stay and 4 ED visits – 1%
- In top 20% of Medicaid spending – 76%
- Health home enrollment or outreach – 61%
- Nursing home stay – 5%

Using the current prioritization menu as a starting point, Part I of the report will investigate the following three specific research questions:

1. Are there redundant criteria?
2. Do any of the current criteria lead to the inclusion of people who are not high resource-users?
3. Are there criteria that should be modified or used more heavily to identify high resource users who are currently excluded?

As part of the investigation of these three research questions, potential modifications to the prioritization criteria will be analyzed to see what impact they would have on the characteristics of actual and potential pools of MRT-SH clients. In this way we will determine whether certain prioritization criteria are more salient to particular client populations.

METHODOLOGY

The analyses in Part I are based on all MRT-SH clients without coverage characteristic restrictions. This, then, is a different sample than that used in previous reports and may not include complete information for all clients (as they may have received services while not covered by Medicaid for which we have no information). The MRT-SH initiatives include over 50 capital projects and 20 rental subsidy and supportive services programs and pilots. Supportive housing enrollment data for each MRT supportive housing participant included in this analysis is based on program records.[4] All analyses presented below are for those programs that began enrolling participants prior to October 2016 and were determined to be appropriate for a comparison group approach. Participants were included for analysis provided that they were enrolled prior to October 2016. Characteristics of clients meeting these criteria were analyzed over the twelve months prior to program enrollment (the pre-period). There were 6,189 MRT-SH clients examined for the Part I analyses.

These clients were compared with and contrasted to Medicaid clients from a random sample of 49,912 New York State Medicaid users who had claims during the same period. The clients in this random sample constitute a pool from which MRT-SH participants are potentially drawn.

Some analyses are further focused on Medicaid clients who appear in the homeless shelter population, as this is a key population to which MRT-SH programs are targeted. These clients were identified in the MRT-SH sample if they appeared in shelter records from the Homeless Management Information System (HMIS) in either New York City or Eastern New York (Hudson Valley, Capital District, or Adirondacks). There were too few clients from the random sample who appeared in the HMIS to analyze, so the subset of analyses that look at shelter users are based on all Medicaid clients with a record of a shelter stay in these regions in the calendar year 2016.

[4] Program record verification dates: HHAP capital projects for participants enrolled through 5/2017; AIDS Institute programs and Health Homes Supportive Housing Pilot through 7/2017; OASAS-RSS and OPWDD-RSS through 8/2017; East 99th Street through 9/2017; HCR Capital projects, OMH RSS and RSB, and NHIL through 10/2017; Access to Home Expansion program through 11/2017.

Analyses in this section focus on: 1) identifying overlap between prioritization criteria, and 2) identifying relationships between various prioritization criteria and other client characteristics. Analyses are mostly descriptive (frequencies or averages for different characteristics under different criteria) or correlational, with a focus on how profiles of current MRT-SH clients and potential clients in the random sample would change under various prioritization criteria.

RESULTS

Research Question #1: Are there redundant criteria?

The vast majority of MRT-SH clients meeting one of the prioritization criteria qualify under one of the following four criteria: 2 or more inpatient stays, 5 or more ED visits, top 20% of Medicaid spending, or Health Home enrollment. Table 1 shows what percentage of clients fitting the other two criteria (1 inpatient stay and 4 ED visits, or any nursing home stay) also qualify under one of the four detailed above. Of those clients with nursing home stays, 98% are captured under at least one of these four key criteria. Of those clients with 1 inpatient stay and 4 ED visits, 99% are captured under one of these four criteria. Subsequently, analyses in this report will focus on relationships between those four key criteria, as the other two qualify very few additional MRT-SH clients.

It is worth noting, however, that in the random sample (RS), 46% of those with 1 inpatient stay and 4 ED visits are not captured under any other criterion. This implies that this is a common stand-alone qualifier in the overall Medicaid population, but is not commonly used by MRT-SH programs to prioritize potential enrollees.

Table 1. Clients with any nursing home stays or with 1 inpatient stay and 4 ED visits who qualify under other prioritization criteria

	MRT-SH	RS
Clients with any nursing home stays		
No other criteria	2%	3%
Top 20 cost	98%	98%
ED visits >=5	11%	2%
Inpatient stays >=2	25%	13%
Health home	34%	1%
Clients with 1 inpatient stay and 4 ED visits		
No other criteria	1%	46%
Top 20 cost	96%	53%
ED visits >=5	0%	0%
Inpatient stays >=2	0%	0%
Health home	75%	6%

Potential clients in the random sample who would qualify under the 1 inpatient stay and 4 ED visits criterion are less likely to have a diagnosis in any of the four primary diagnostic categories for MRT-SH compared to clients who would qualify under another criterion (Table 2). They are more likely to be women and less likely to live in New York City. They are substantially younger, on average. While they average almost the same number of inpatient stays, they have fewer inpatient days but more ED visits. They are substantially lower-cost clients on average than clients who qualify under other criteria.

Table 2. Characteristics of Potential MRT-SH Clients (from Random Sample) Who Would Qualify under Only 1 Inpatient Stay and 4 ED Visits vs. Qualifying Under Other Criteria

	Qualifying clients	
	Only 1 inpatient stay and 4 ED visits	Other Criteria
SMI	15%	29%
SUD	7%	14%
HIV	0%	5%
Chronic condition	25%	53%
Male	18%	39%
Black	21%	24%
Hispanic	10%	8%
New York City	47%	55%
Age at enrollment	36.3	55.6
Inpatient stays	1.0	0.9
Inpatient days	2.4	5.5
ED visits	4.0	2.6
Costs (median)	$8,625	$21,726
Psych inpatient	0.8%	4%
SUD rehab	0%	2%

This shows that people who qualify under the 1 inpatient stay and 4 ED visits criteria are different in important ways from those who qualify under the other criteria. However, these clients still can be considered high resource users and are thus an appropriate target population who appear to be not commonly targeted by MRT-SH programs. It should be a matter of continued policy discussion whether programs should be encouraged to more aggressively target people who meet this prioritization criterion.

Returning the focus to the four prioritization criteria that are mostly commonly used by the programs, it is important to understand how these criteria relate to one another. There are statistically significant correlations between each of these four criteria, among both current MRT-SH clients and in a random sample of the adult Medicaid population overall (Table 3). Also examined is inpatient days, which are related to but distinct from inpatient stays (a person can have one inpatient stay that lasts many days, or many inpatient stays that each last only a day, and clients with many inpatient stays may have a different clinical profile than those with many inpatient days).

Overall, the correlations between these various factors look very similar between the MRT-SH population and the random sample. The correlation between inpatient days and stays was somewhat higher in the random sample, perhaps because MRT-SH clients are more likely to have very long inpatient stays to treat psychiatric disorders or substance abuse. Inpatient stays were more highly correlated with total costs in the random sample than the MRT-SH sample, while the opposite was true of emergency department visits (this may also be because of the higher prevalence of behavioral health issues, which result in frequent ED visits, among the MRT-SH population).

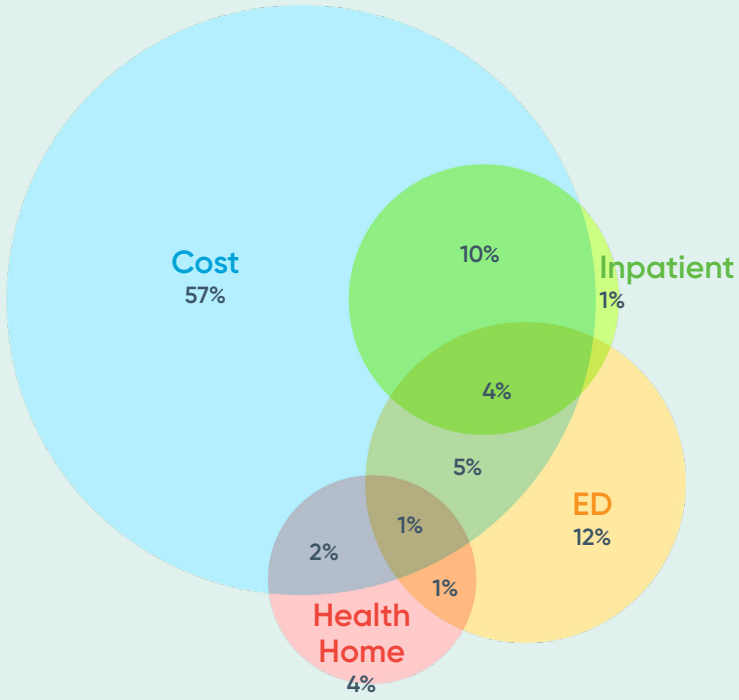
Table 3. Pearson Correlation Coefficients for Prioritization Criteria, MRT-SH Clients and Medicaid Random Sample

	MRT-SH	RS
Inpatient Days*Inpatient Stays	0.527***	0.642***
Inpatient Days* ED Visits	0.238***	0.146***
Inpatient Days * Total Costs	0.276***	0.270***
Inpatient Days * Health Home	0.084***	0.078***
Inpatient Stays * ED Visits	0.198***	0.269***
Inpatient Stays * Total Costs	0.134***	0.220***
Inpatient Stays * Health Home	0.049***	0.073***
ED Visits * Total Costs	0.173***	0.057***
ED Visits * Health Home	0.148***	0.104***
Total Costs * Health Home	0.076***	0.027***

This correlation analysis indicates that none of these prioritization criteria are a good substitute for any other single criterion, either among clients in the MRT-SH program or in the Medicaid population at large. The items with the greatest overlap are, not surprisingly, the two measures of inpatient utilization.

This does not answer the question, however, of whether any of these criteria are almost completely accounted for by the other criteria in combination. Figure 1 shows the combinations of the four key criteria among members of the random sample who meet at least one item on the prioritization menu.

Figure 1. Overlap between Prioritization Criteria, Qualifying Random Sample Clients



Note: Does not show the 1% who qualify only under some other criterion (nursing home stay or combination of 1 inpatient stay 4 ED visits). Does not show the 1% who meet all four key criteria.

The qualifying patterns of clients who were actually enrolled in MRT-SH, however, look quite a bit different (Figure 2). It is still the case that the majority who qualify do so under the cost criterion – 88%. But very few MRT-SH clients who meet the qualifying criteria do so based on ED visits alone (0.3%).

It also remains the case that the inpatient criterion adds very few clients (0.4% of those who qualify [not shown in figure]) who are not captured by one of the other criteria. However, health home enrollment is a bigger factor among the MRT-SH clients. Eleven percent of those who qualify under the prioritization menu do so only under the health home criterion.

Figure 2. Overlap between Prioritization Criteria, Qualifying MRT-SH Clients

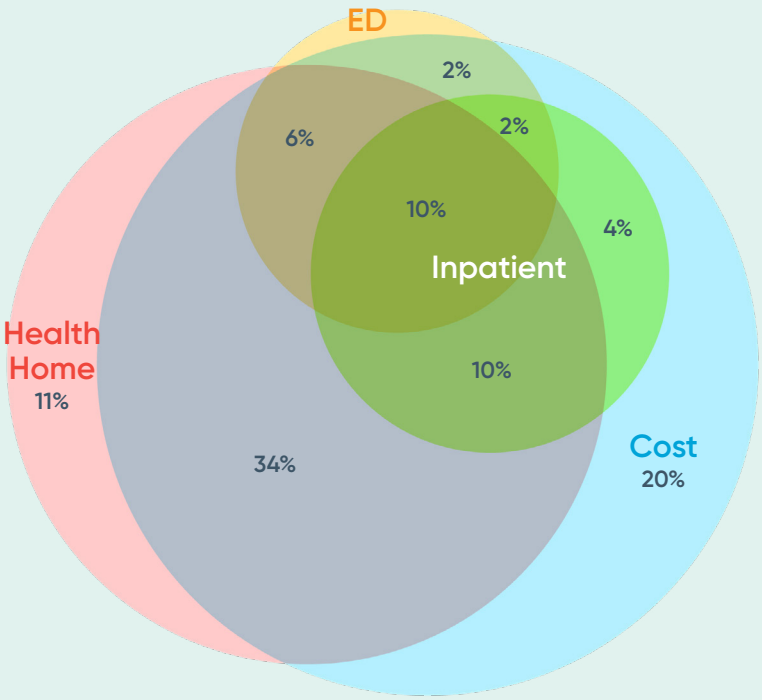


Table 4 compares the characteristics of the individuals who qualify under the prioritization menu in both populations. There is a sharp difference in terms of behavioral health and HIV diagnoses. These differences may fall out, however, if the diagnostic criteria relative to specific programs were applied to the RS population. Other sharp differences may be related to the diagnostic selection as well – the higher costs and utilization among the MRT-SH population, as well as the younger age and higher percent African-American may be related to their greater likelihood of having these diagnoses (as well as geographic variation in the MRT-SH programs targeted to these diagnoses).

Research Question #2: Do any of the current criteria include people who are not high resource users?

The use of health home enrollment as a standalone criteria is not theoretically related to cost and utilization. Furthermore, although health home enrollment is correlated with higher resource use (see Table 3), those people who are enrolled in health homes without any other indicator of high resource use appear to constitute a different – and less acute – population than those who meet other criteria.

In Table 5, we see that people who qualify for MRT-SH under the health home criterion but no other criteria are different in their diagnoses, utilization, and costs. They are dramatically lower resource users than those who qualify under one of the other criteria, and are less likely to have any of the four types of diagnoses that are common among MRT-SH clients.

At the same time, excluding these people from the program would not result in any biases in terms of demographic characteristics. People who qualify only because of their health home enrollment are similar in race, gender, age, and housing history to those who qualify under other criteria (although they are somewhat less likely to be in New York City).

Table 4. Characteristics of Qualifying Clients, MRT-SH vs. Random Sample

	Qualifying clients	
	MRT-SH	RS
SMI	62%	29%
SUD	42%	14%
HIV	20%	5%
Chronic condition	54%	52%
Male	55%	38%
Black	39%	24%
Hispanic	8%	8%
New York City	49%	55%
Age at enrollment	48.6	55.4
Inpatient stays	1.67	0.9
Inpatient days	11.7	5.4
ED visits	3.2	2.6
Costs (median)	$42,947	$21,404
Psych inpatient	10%	4%
SUD rehab	7%	2%

Table 5. Characteristics of MRT-SH Qualifying under Health Home Criterion Only vs. Any Other Criteria (May include clients in health homes)

	Qualifying MRT-SH clients	
	Qualify only by health home	Qualify under other criteria
SMI	50%	64%
SUD	18%	45%
HIV	12%	21%
Chronic condition	37%	56%
Male	56%	54%
Black	38%	39%
Hispanic	8%	8%
New York City	44%	50%
Age at enrollment	50.4	48.4
Inpatient stays	0.08	1.9
Inpatient days	0.6	12.5
ED visits	0.6	3.5
Costs (median)	$5,528	$49,720
Shelter use	18%	21%
Psych inpatient	2%	12%
SUD rehab	0.7%	8%

This means that people who qualify only because of their health home enrollment are not high-cost or high-utilizing clients. If high-cost, high-utilizing clients are the target group for MRT-SH, this criterion is not effective in capturing them.

Based on the analysis detailed above, it appears that inpatient stays alone do not add very many additional qualifying clients (either among actual MRT-SH clients or potential clients in the random sample). This is one criterion that could potentially be dropped from the prioritization menu. Also, health home enrollment is a criterion that may be a poor proxy for the population that the MRT-SH program overall is interested in targeting. It is an open policy question whether health home enrollment should be dropped as a standalone criterion.

Table 6 illustrates how the MRT-SH population would potentially look if we were to drop the inpatient and the health home criteria and use a prioritization menu based only on cost and ED visits. Demographic and diagnostic characteristics would barely change at all. Average utilization would increase very modestly, and average spending would increase by more than $10,000.

In sum, dropping both the health home and inpatient criteria and basing the prioritization menu only on costs and ED visits would not dramatically change the character of the clients currently being served by MRT-SH. This simplified prioritization menu would be a more streamlined way to capture largely the same type of clients, while at the same time trimming out some of those who are less intensive users of resources. The same is true when looking at how the abbreviated prioritization criteria would affect the random sample. The group identified under the current criteria and the group identified using only costs and ED visits are extremely similar, with the latter group very slightly more acute in terms of diagnoses and resource use.

Table 6. Characteristics of Actual MRT-SH Clients Qualifying under Current Criteria vs. Qualifying Only under Cost or ED Criteria (i.e. if inpatient and health home criteria were dropped)

	Qualifying clients	
	MRT-SH (current criteria)	MRT (only cost or ED)
SMI	62%	64%
SUD	42%	45%
HIV	20%	21%
Chronic condition	54%	56%
Male	55%	54%
Black	39%	39%
Hispanic	8%	8%
New York City	49%	50%
Age at enrollment	48.6	48.3
Inpatient stays	1.7	1.8
Inpatient days	11.7	12.5
ED visits	3.2	3.5
Costs (median)	$42,947	$50,243
Shelter use	21%	21%
Psych inpatient	10%	12%
SUD rehab	7%	8%

Table 7 illustrates how the population of potential MRT-SH clients would change if inpatient and the health home criteria were dropped and a prioritization menu based only on cost and ED visits was used instead. As within the MRT-SH population, the change would lead to very little difference in the characteristics of those who were eligible under the abbreviated prioritization menu.

Table 7. Characteristics of Potential MRT-SH Clients (from Random Sample) Who Would Qualify under Current Criteria vs. Qualifying Only under Cost or ED Criteria

	Qualifying clients	
	RS (current criteria)	RS (only cost or ED)
SMI	29%	30%
SUD	14%	14%
HIV	5%	5%
Chronic condition	52%	53%
Male	38%	38%
Black	24%	24%
Hispanic	8%	8%
New York City	55%	55%
Age at enrollment	55.4	55.9
Inpatient stays	0.9	0.9
Inpatient days	5.4	5.7
ED visits	2.6	2.7
Costs (median)	$21,404	$23,521
Psych inpatient	4%	4%
SUD rehab	2%	2%

Research Question #3: Are there criteria that should be modified or used more heavily to identify high resource users who are not currently identified?

The previous research questions focused on the potential for reducing and streamlining the prioritization menu to include only criteria that were indicators of high resource use and were non-redundant with other criteria. These analyses suggested that a prioritization menu limited to the criteria related to cost and ED visits would adequately achieve the goals of targeting the MRT-SH program without systematically biasing the process against particular groups of clients. The current research question is focused on whether these two criteria can be used more effectively in identifying the appropriate target population.

ED Visits. Referring back to the Venn diagrams for prioritization criteria among MRT-SH clients and the random sample of Medicaid clients (Figures 1 and 2), it appears clear that a substantial percentage of the Medicaid population meets the current prioritization criteria only on the basis of their ED use (12%). However, almost none of the actual MRT-SH clients meet only this criteria. These two Venn diagrams, viewed in concert, suggest that MRT-SH programs are not generally enrolling people if the ED criterion is the only prioritization criteria they meet.

When those clients who qualify only under the 5 or more ED visits criterion and those who qualify under other criteria (which may include people with 5 or more ED visits) are compared, it becomes clear that people who *only* meet the ED criterion, like those who only met the health home criterion (Table 5) have lower cost, lower inpatient utilization, and are less likely to have SMI or a chronic condition. However, their high ED use, in and of itself, indicates an acute level of medical need.

It should also be noted that those who only meet the ED criterion are demographically different in important ways from those meeting other criteria. These clients are more likely to be female (70% versus 60%), more likely to be Black (30% versus 23%), and are dramatically younger (average age 37.0 versus 57.9). *This implies that a failure to include these clients under the prioritization menu will bias MRT-SH clients to be more male, more non-Hispanic white, and older. Those captured under only the ED criterion appear to represent a distinct group of high utilizers who meet the definition of a high utilizer, but have a different demographic profile from those meeting other criteria and who would not otherwise be captured by the MRT-SH programs.*

Combination criteria. Combinations such as SMI and psych inpatient, or SUD and inpatient rehab, were also examined. Like nursing home stays, most of the people thus identified were already qualified under another criteria (usually cost), especially in the MRT-SH population.

Diagnosis-specific costs. One of the clearest patterns observed when comparing qualifying clients from the RS to those in MRT-SH, regardless of what criteria are applied, is that the random sample always has substantially lower levels of cost (even when the cost criterion is the same for both samples). One reason for this may be that the cost criterion is based on the top 20% of spending in the random sample, which includes a high percentage of people without any diagnoses in the four categories that are central to the MRT-SH programs. People with diagnoses in these categories have higher average spending than those without such diagnoses. Further, the determination of whether people in the random sample would qualify for MRT-SH is not based in previous analyses on any diagnostic criteria (except for Table 9).

This raises the question of whether the cost thresholds used in targeting should be diagnosis-specific. This is difficult to implement for MRT-SH overall, however, as the diagnoses that are required for MRT-SH enrollment vary by the particular MRT-SH program. Further, a very high percentage of clients have diagnoses in more than one category (e.g., an SMI and an SUD), which would mean that two different cost thresholds would potentially apply to them.

The only way to adequately make an apples-to-apples comparison between the MRT-SH and the random sample clients under various proposed targeting criteria and to determine how changes in targeting criteria would affect the client population in MRT-SH programs is to look at program-specific criteria (e.g., diagnosis, geography) and the associated diagnosis-specific cost threshold. Table 10, below, shows the dramatic variation in cost percentiles by diagnostic category.

Table 8. Characteristics of Random Sample Clients Qualifying under ED Criterion Only vs. Any Other Criteria (May include those with 5 or more ED Visits)

	Qualifying RS clients	
	Qualify only by ED visits >=5	Qualify under other criteria
SMI	22%	30%
SUD	14%	14%
HIV	2%	6%
Chronic condition	27%	56%
Male	30%	40%
Black	30%	23%
Hispanic	7%	8%
New York City	50%	56%
Age at enrollment	37.0	57.9
Inpatient stays	0.14	1.0
Inpatient days	0.35	6.1
ED visits	7.5	1.9
Costs (median)	$4,204	$25,376
Psych inpatient	0.5%	4%
SUD rehab	0%	2%

Table 9. Percent of MRT-SH and RS Clients Qualifying under Selected Combination Criteria who Qualify Under Current Prioritization Criteria

	MRT-SH	RS
SMI + Inpatient psych stay		
No other criteria	1%	11%
Top 20 cost	95%	86%
ED visits >=5	45%	31%
Inpatients stays >=2	73%	61%
SUD + Inpatient rehab stay		
No other criteria	0%	6%
Top 20 cost	96%	87%
ED visits >=5	36%	33%
Inpatients stays >=2	89%	83%

Table 10. Cost Percentiles from Random Sample, by Diagnostic Category

	All	SMI	SUD	HIV	Chronic medical
10th	$97	$1,497	$1,632	$2,950	$1,164
20th	$426	$2,760	$3,328	$7,191	$2,203
30th	$846	$4,418	$5,261	$12,061	$3,503
40th	$1,411	$6,500	$7,436	$18,393	$5353
50th	$2,209	$9,400	$9,902	$23,292	$8,019
60th	$3,606	$13,774	$13,462	$29,368	$12,100
70th	$6,429	$21,127	$18,552	$36,631	$19,221
80th	$11,603	$36,121	$27,444	$48,594	$35,430
90th	$28,691	$72,535	$44,746	$70,416	$68,796

Note: Diagnostic categories are not mutually exclusive.

TARGETING CRITERIA BY SUBGROUP

Severe Mental Illness (SMI)

In the MRT-SH program, 96% of the clients with an SMI meet at least one of the prioritization criteria. Ninety percent do so under the cost criterion (alone or in combination with other criteria). Most of the remainder do so under the health home criterion. In the random sample, 53% of clients meet at least one of the prioritization criteria. Eighty-five percent do so under the cost criterion. Among the remainder, most do so under the ED criterion.

Figure 3. Overlap between Prioritization Criteria, Qualifying MRT-SH Clients and Random Sample Clients with SMI

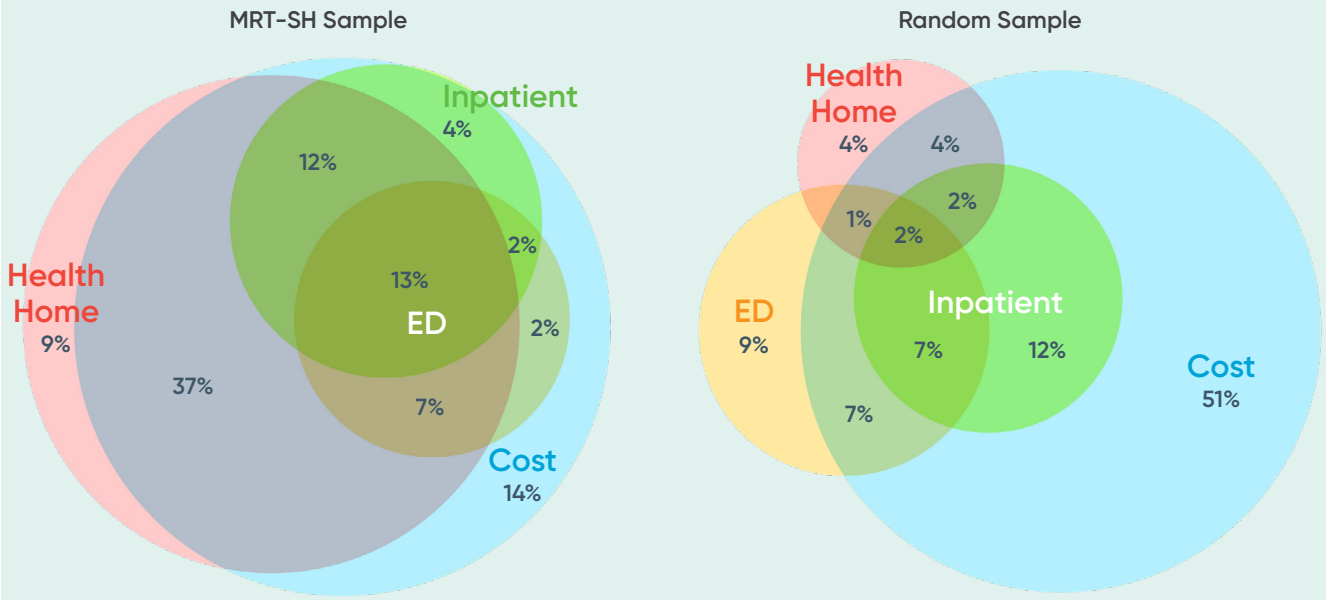


Table 11 shows how the characteristics of actual MRT-SH clients with an SMI would change using: 1) the current prioritization criteria, 2) a proposed change to using only the cost and ED criteria, and 3) a change to using only the cost and ED criteria with cost being based on the top 20% of clients with an SMI in the random sample. First, we see that there would be a relatively modest loss in the percentage of MRT-SH clients who would qualify under the proposed cost-or-ED criteria.

However, if the cost threshold were based on the top 20% of spenders with SMI in the random sample, rather than the top 20% of all spenders, only 61% of current clients would qualify.

Similarly there would not be a substantial change in the diagnostic profile of clients who qualified under the current criteria versus a cost-or-ED criteria. However, if cost were based on clients with SMI, the percentage with the various comorbidities (especially HIV and other chronic medical conditions) would increase. The demographic profile would not change dramatically under any of the proposed criteria. The greatest difference would be in the resource-use characteristics – a prioritization menu based only on ED visits and the top 20% of costs among clients with SMI would result in a client population that has a substantially higher level of resource use than clients who qualify under the current criteria.

Table 11. Characteristics of MRT-SH Clients with an SMI who Qualify under Selected Criteria

Overall n=3,487	Current criteria (n=3,354)	Top 20% cost (all RS) or ED visits >=5 (n=3,052)	Top 20% cost (SMI clients) or ED visits >=5 (n=2,139)
Pct. Qualifying	**96%**	**88%**	**61%**
SUD	50%	53%	55%
HIV	16%	17%	21%
Chronic condition	53%	55%	61%
Male	53%	53%	53%
Black	36%	36%	37%
Hispanic	8%	8%	9%
New York City	48%	49%	50%
Age at enrollment	45.6	45.6	46.3
Inpatient stays	1.9	2.0	2.5
Inpatient days	13.9	15.1	19.1
ED visits	3.9	4.2	5.5
Costs (median)	$43,314	$48,187	$69,097
Health home	78%	76%	77%
Shelter use	25%	25%	23%
Psych inpatient	16%	18%	21%
SUD rehab	8%	9%	9%

Below are the characteristics of clients in the RS who have an SMI, and how their characteristics would change under different prioritization measures. There were 6,814 clients identified in the random sample with an SMI. Of these, 53% would qualify under the current prioritization menu, 50% would qualify under an abbreviated prioritization menu, and 31% would qualify under an abbreviated menu where the cost criterion was based on clients with SMI. The first two sets of criteria would not result in a very different client population, but the latter criteria would result in a somewhat more acute population in terms of resource use (although not one that is very demographically different).

The most interesting comparison is the comparison between the data in Table 12 and the first column in Table 11. The first column in Table 11 represents the profile of MRT-SH clients with SMI largely as they exist now (excluding the 4% who did not qualify under any of the current criteria). Assuming that the program is currently doing a good job of targeting appropriate clients, we want to identify a set of criteria that, when applied to the random sample, would produce a set of potential clients with a similar profile.

In this case, the more restrictive criteria (the cost-or-ED, with cost based on SMI clients) produces the most similar client set. However, there are two important considerations. First, when the same diagnosis-based cost criteria is applied to both groups of clients, a pronounced difference between the RS client and the MRT-SH clients remains (a median spend of $48,919 among clients identified in the former group, compared to $69,097 among clients identified in the latter group). *If clients with this level of spending are the desired client population, it should be recognized that the prioritization criteria*

explored in Table 12 will not, in and of itself, result in clients with this spending profile. Also, the actual MRT-SH clients were substantially more likely to have a co-occurring SUD, to have HIV, or to have had a psychiatric inpatient stay (none of which are part of the prioritization menu, but may factor into prioritization decisions at the provider level.

Secondly, adopting the more restrictive criteria would suggest that nearly 40% of the actual MRT-SH clients with SMI were not clients that should be prioritized in the future. Presumably, these were the lower-spending clients (those lost between the second and third columns in Table 11). Whether or not excluding the lower-spending clients in the future is a desirable approach in terms of maximizing program effect will depend on the results from Part II of this report. A positive finding in Table 11, however, is that the profile of the client population would not be biased towards or against any subgroup of clients with any changes in the proposed prioritization.

Table 12. Characteristics of Potential Clients in RS with SMI who Qualify under Selected Criteria

Overall n=6,814	Current criteria (n=3,594)	Top 20% cost (all RS) or ED visits >=5 (n=3,410)	Top 20% cost (SMI clients) or ED visits >=5 (n=2,100)
Pct. Qualifying	**53%**	**50%**	**31%**
SUD	26%	26%	26%
HIV	6%	5%	6%
Chronic condition	53%	55%	57%
Male	42%	41%	41%
Black	23%	23%	24%
Hispanic	8%	8%	8%
New York City	47%	48%	47%
Age at enrollment	52.6	53.1	54.5
Inpatient stays	1.2	1.3	1.6
Inpatient days	9.7	10.2	13.8
ED visits	3.4	3.5	5.0
Costs (median)	$25,283	$27,050	$48,919
Health home	14%	10%	10%
Psych inpatient	12%	12%	14%
SUD rehab	4%	4%	5%

In sum, a switch to a prioritization menu based only on costs and ED visits would not result in substantial changes to the client profile among either actual or potential MRT-SH clients with SMI. However, if the cost percentile were to be calculated on Medicaid clients with SMI, rather than Medicaid clients overall, this would result in a smaller targeting group with higher levels of resource use. None of the prioritization criteria analyzed, when applied to the random sample of Medicaid clients, would produce a sample of potential clients that is comparable to actual MRT-SH clients in average level of costs.

Substance Use Disorder (SUD)

In the MRT-SH program, 97% of the clients with an SUD meet at least one of the prioritization menu criteria. Of these, 94% qualify under the cost criterion (alone or in combination with other criteria). The majority of those who do not meet the cost criterion qualify under the health home criteria, but only 5% of the MRT-SH sample qualify under health homes alone.

In the random sample, 57% of clients with an SUD meet at least one prioritization criteria. Of those, 79% qualify under cost (alone or in combination with other criteria), while another 15% qualify under the ED criterion (alone or in combination with other criteria besides cost). The Venn diagram below does not show the 3% who qualify only under health home enrollment. Another 3% qualify only under the inpatient criterion, and nearly 1% (also not shown) qualify under some other criterion (nursing home or 1 inpatient stay and four ED visits). Dropping those criteria, then, would disqualify 7% of those random sample clients who would currently qualify.

Figure 4. Overlap between Prioritization Criteria, Qualifying MRT-SH Clients and Random Sample Clients with SUD

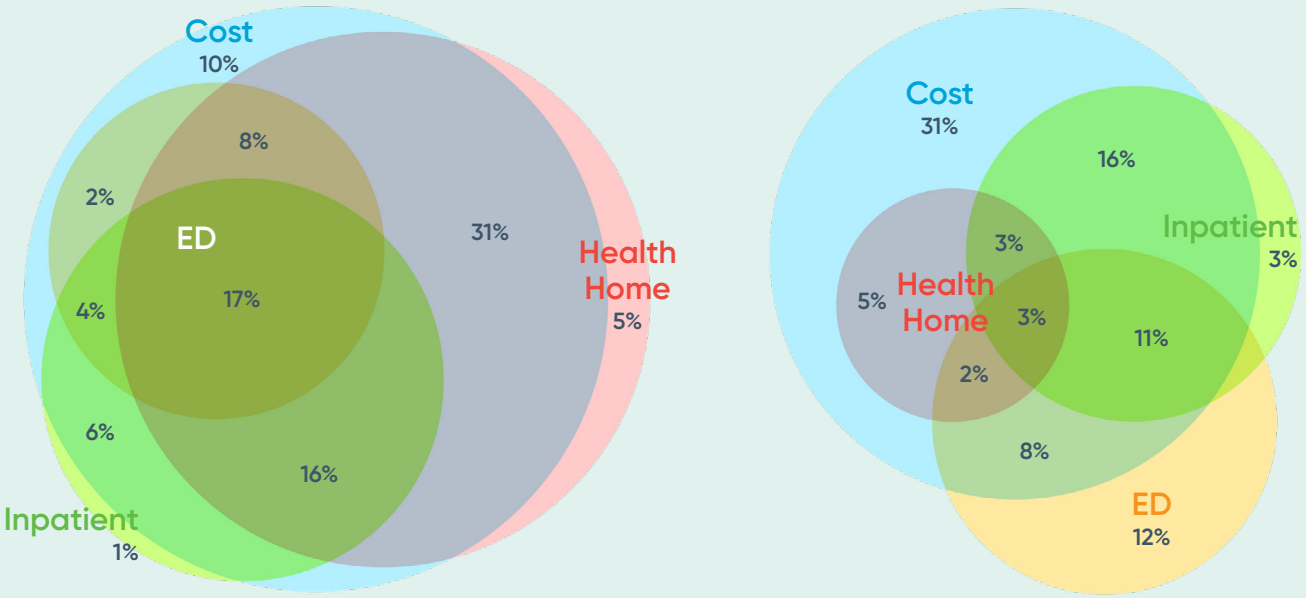


Table 13 shows how the characteristics of actual MRT-SH clients with an SUD would change using: 1) the current prioritization criteria, 2) a proposed change to using only the cost and ED criteria, and 3) a change to using only the cost and ED criteria with cost being based on the top 20% of clients with an SUD in the random sample. First, we see that implementing the cost-or-ED criteria instead of the more extensive menu would result in only a modest loss in the percentage of MRT-SH clients who would qualify. However, if the cost threshold were based on the top 20% of spenders with an SUD in the random sample, only 64% of current clients would qualify.

There would not be a substantial change in the diagnostic or demographic profile of clients who qualified under any of the three sets of criteria, although there would be modestly more utilization using the criteria where the cost threshold was based on clients with an SUD. The big difference is that using the SUD-specific cost criteria would result in clients with a higher median level of spending than the other two sets of criteria.

Table 13. Characteristics of MRT-SH Clients with an SUD who Qualify under Selected Criteria

Overall n=2,309	Current criteria (n=2,250)	Top 20% cost (all RS) or ED visits >=5 (n=2,125)	Top 20% cost (SUD clients) or ED visits >=5 (n=1,719)
Pct. Qualifying	**97%**	**92%**	**74%**
SMI	74%	75%	77%
HIV	22%	23%	26%
Chronic condition	52%	53%	57%
Male	63%	63%	62%
Black	38%	38%	39%
Hispanic	8%	8%	9%
New York City	49%	50%	51%
Age at enrollment	45.1	45.1	45.5
Inpatient stays	3.1	3.2	3.7
Inpatient days	18.7	19.6	22.0
ED visits	4.7	5.0	5.9
Costs	$45,905	$50,012	$63,771
Health home	77%	77%	79%
Shelter use	28%	28%	28%
Psych inpatient	16%	16%	18%
SUD rehab	17%	17%	17%

Below are the characteristics of qualifying clients in the RS who have an SUD, and how their characteristics would change under different prioritization measures. There were 2,990 clients identified in the random sample with an SUD. Of these, 57% would qualify under the current prioritization menu, 53% would qualify under an abbreviated prioritization menu, and 34% would qualify under an

abbreviated menu where the cost criterion was based on clients with an SUD. The first two sets of criteria would not result in a very different client population, but the latter criteria would result in a substantially more acute population in terms of resource use (although not one that is very demographically different).

The most interesting comparison is the comparison between the data in Table 14 and the first column in Table 13. The first column in Table 13 represents the profile of MRT-SH clients with an SUD largely as they exist now (excluding the 3% who did not qualify under any of the current criteria). Assuming that the program is currently doing a good job of targeting appropriate clients, we want to identify a set of criteria that, when applied to the random sample, would produce a set of potential clients with a similar profile.

In this case, the most restrictive criteria (the cost-or-ED criteria, with cost based on SUD clients) produces the most similar client set. However, there are two important considerations. First, even the more restrictive criteria, when applied to the random sample, identifies clients with considerably lower average spending than the clients who were actually enrolled ($30,464 versus $45,905). When the same restrictive criteria is applies to the MRT-SH clients, the difference is exacerbated (as these clients then have an average spend of $63,771). *If clients with this level of spending are the desired client population, it should be recognized that the prioritization criteria explored in Table 12 will not, in and of itself, result in clients with this spending profile.* Also, the actual MRT-SH clients were substantially more likely to have a co-occurring SUD, to have HIV, or to have another chronic medical condition (none of which are part of the prioritization menu, but may factor into prioritization decisions at the provider level).

Secondly, adopting the more restrictive criteria would suggest that 26% of the actual MRT-SH clients with an SUD were not clients that should be prioritized in the future. Presumably these are the lower-spending clients (those lost between the second and third columns in Table 13). Whether or not excluding the lower-spending clients in the future is a desirable approach in terms of maximizing program impact will depend on the results from Part II of this report. An encouraging finding in Table 13, however, is that the profile of the client population would not be biased towards or against any subgroup of clients with any changes in the proposed prioritization.

Table 14. Characteristics of RS Clients with an SUD who Qualify under Selected Criteria

Overall n=2,990	Current criteria (n=1,698)	Top 20% cost (all RS) or ED visits >=5 (n=1,584)	Top 20% cost (SUD clients) or ED visits >=5 (n=1,028)
Pct. Qualifying	**57%**	**53%**	**34%**
SMI	54%	56%	60%
HIV	11%	11%	13%
Chronic condition	42%	42%	46%
Male	64%	63%	63%
Black	31%	31%	32%
Hispanic	6%	7%	7%
New York City	48%	48%	50%
Age at enrollment	45.7	45.9	46.0
Inpatient stays	2.0	2.0	2.5
Inpatient days	13.4	13.9	17.3
ED visits	5.0	5.3	7.4
Costs (median)	$19,685	$21,006	$30,464
Health home	18%	16%	18%
Psych inpatient	11%	12%	15%
SUD rehab	14%	14%	15%

HIV

In the MRT-SH program, 97% of the clients with HIV meet at least one of the prioritization criteria. Ninety-three percent of those who qualify do so under the cost criterion (alone or in combination with other criteria). Most of the remainder do so under the health home criterion. In the random sample, 89% of clients with HIV meet at least one of the prioritization criteria. Of those who do, 80% do so under the cost criteria. As with the MRT-SH sample, most of the remainder do so under the health home criterion.

Figure 5. Overlap between Prioritization Criteria, Qualifying MRT-SH Clients and Random Sample Clients with HIV

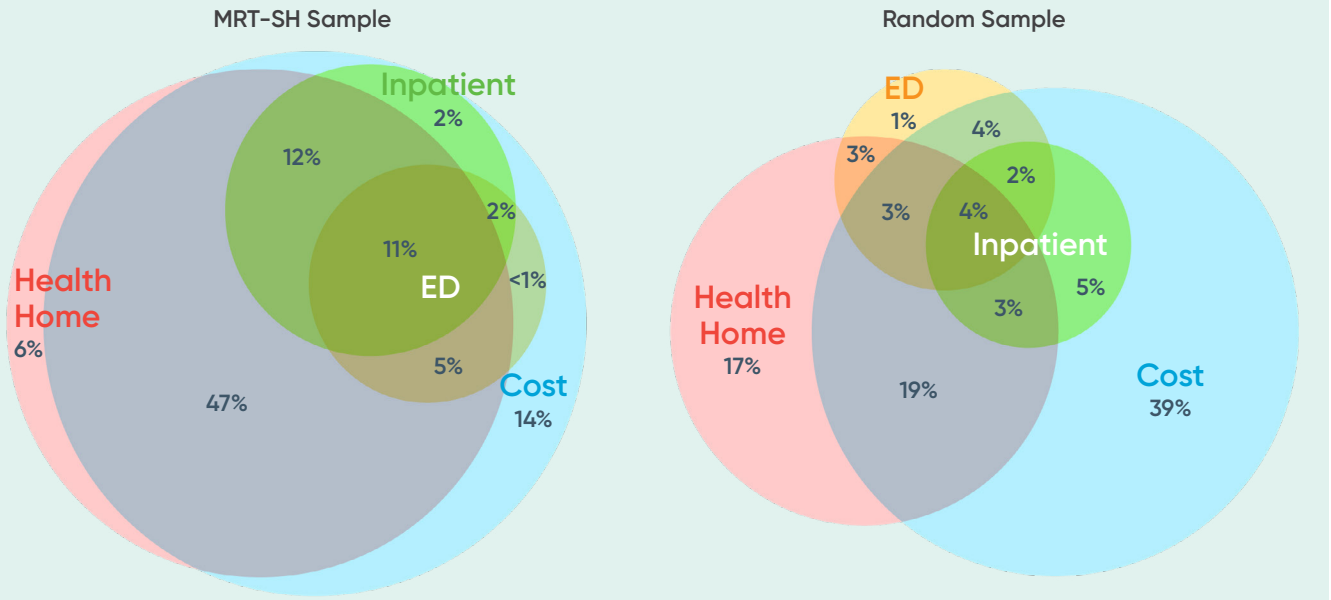


Table 15 shows how the characteristics of actual MRT-SH clients with HIV would change using: 1) the current prioritization criteria, 2) a proposed change to using only the cost and ED criteria, and 3) a change to using only the cost and ED criteria with cost being based on the top 20% of clients with HIV in the random sample. First, we see that there would be a relatively modest loss in the percentage of MRT-SH clients who would qualify under the proposed cost-or-ED criteria. However, if the cost threshold were based on the top 20% of spenders with HIV, rather than the top 20% of all spenders, only 72% of current clients would qualify.

There would be minimal changes in the profile of clients across the three different sets of criteria. Utilization would be somewhat higher using the diagnosis-specific cost criteria. The single substantial change would be in median costs among those who qualify, especially those who qualify under a diagnosis-specific cost criterion.

Table 15. Characteristics of MRT-SH Clients with HIV who Qualify under Selected Criteria

Overall n=1,085	Current criteria (n=1,052)	Top 20% cost (all RS) or ED visits >=5 (n=983)	Top 20% cost (HIV clients) or ED visits >=5 (n=755)
Pct. Qualifying	**97%**	**91%**	**72%**
SMI	51%	52%	55%
SUD	47%	49%	51%
Chronic condition	47%	48%	54%
Male	62%	61%	59%
Black	56%	56%	56%
Hispanic	12%	12%	13%
New York City	68%	70%	74%
Age at enrollment	46.7	46.8	47.6
Inpatient stays	1.5	1.6	1.9
Inpatient days	9.3	10.0	12.1
ED visits	3.0	3.2	3.9
Costs (median)	$77,766	$83,544	$104,353
Health home	82%	81%	82%
Shelter use	9%	9%	9%
Psych inpatient	4%	5%	6%
SUD rehab	4%	5%	4%

Below are the characteristics of qualifying clients in the random sample who have HIV, and how those characteristics would change under different prioritization measures. There were 707 clients identified in the random sample with HIV. Of these, 89% would qualify under the current prioritization menu, 74% would qualify under an abbreviated prioritization menu, and only 30% would qualify under an abbreviated menu with a diagnosis-specific cost criterion.

The most interesting comparison is the comparison between the data in Table 16 and the first column in Table 15 The first column in Table 15 represents the profile of MRT-SH clients with HIV largely as they exist now (excluding the 3% who did not qualify under any of the current criteria). Assuming that the program is currently doing a good job of targeting appropriate clients, we want to identify a set of criteria that, when applied to the random sample, would produce a set of potential clients with a similar profile.

In this case, the more restrictive criteria (the cost-or-ED, with cost based on HIV clients) produces the most similar client set. However, there are two important considerations. First, even the more restrictive criteria, when applied to the random sample, identifies clients with considerably lower average spending than the clients who were actually enrolled ($58,251 versus $77,766). When the same restrictive criteria is applied to the MRT-SH clients, the difference is exacerbated (as those clients then have an average spend of $104,353). *If clients with this level of spending are the desired client population, it should be recognized that the prioritization criteria explored in Table 16 will not, in and of itself, result in clients with this spending profile.*

Secondly, adopting the more restrictive criteria would suggest that 28% of the actual MRT-SH clients with HIV were not clients that should be prioritized in the future. Presumably these were the lower-spending clients (those lost between the second and third columns in Table 15). Whether or not excluding the lower-spending clients in the future is a desirable approach in terms of maximizing program effect will depend upon the results from Part II of this report.

It should be noted in Table 15 that the profile of the client population would not be strongly biased towards or against any subgroup of clients with any changes in the proposed prioritization (although the more restrictive criteria would modestly increase the percentage of clients with the various comorbidities).

Table 16. Characteristics of RS Clients with HIV who Qualify under Selected Criteria

Overall n=707	Current criteria (n=631)	Top 20% cost (all RS) or ED visits >=5 (n=522)	Top 20% cost (HIV clients) or ED visits >=5 (n=210)
Pct. Qualifying	**89%**	**74%**	**30%**
SMI	34%	35%	48%
SUD	29%	33%	44%
Chronic condition	45%	44%	61%
Male	55%	56%	58%
Black	47%	50%	51%
Hispanic	10%	11%	12%
New York City	78%	80%	78%
Age at enrollment	50.9	50.9	51.1
Inpatient stays	0.7	0.9	1.5
Inpatient days	5.0	6.1	12.1
ED visits	2.2	2.5	4.9
Costs (median)	$25,813	$31,183	$58,251
Health home	49%	39%	40%
Psych inpatient	3%	4%	6%
SUD rehab	3%	4%	7%

In sum, a switch to a prioritization menu based only on costs and ED visits would not result in substantial changes to the client profile among either actual or potential MRT-SH clients with HIV. However, if the cost percentile were to be calculated on Medicaid clients with HIV, rather than Medicaid clients overall, this would result in a smaller targeting group with higher levels of resource use. Applied to the random sample population, it would also result in a targeting group with substantially higher levels of comorbidities. None of the prioritization criteria analyzed, when applied to the random sample, would produce a sample of potential clients that is comparable to actual MRT-SH clients in average level of costs.

Chronic Medical Conditions

In the MRT-SH program, 93% of the clients with chronic medical conditions meet at least one of the prioritization criteria. Ninety-one percent of those who qualify do so under the cost criterion (alone or in combination with other criteria). Most of the remainder do so under the health home criterion. In the random sample, 47% of clients with chronic medical conditions meet at least one of the prioritization criteria. Of those who do, 88% do so under the cost criteria (alone or in combination with other criteria). Most of the remainder do so under the ED criterion or the health home criterion.

Figure 6. Overlap between Prioritization Criteria, Qualifying MRT-SH Clients and Random Sample Clients with Chronic Medical Conditions

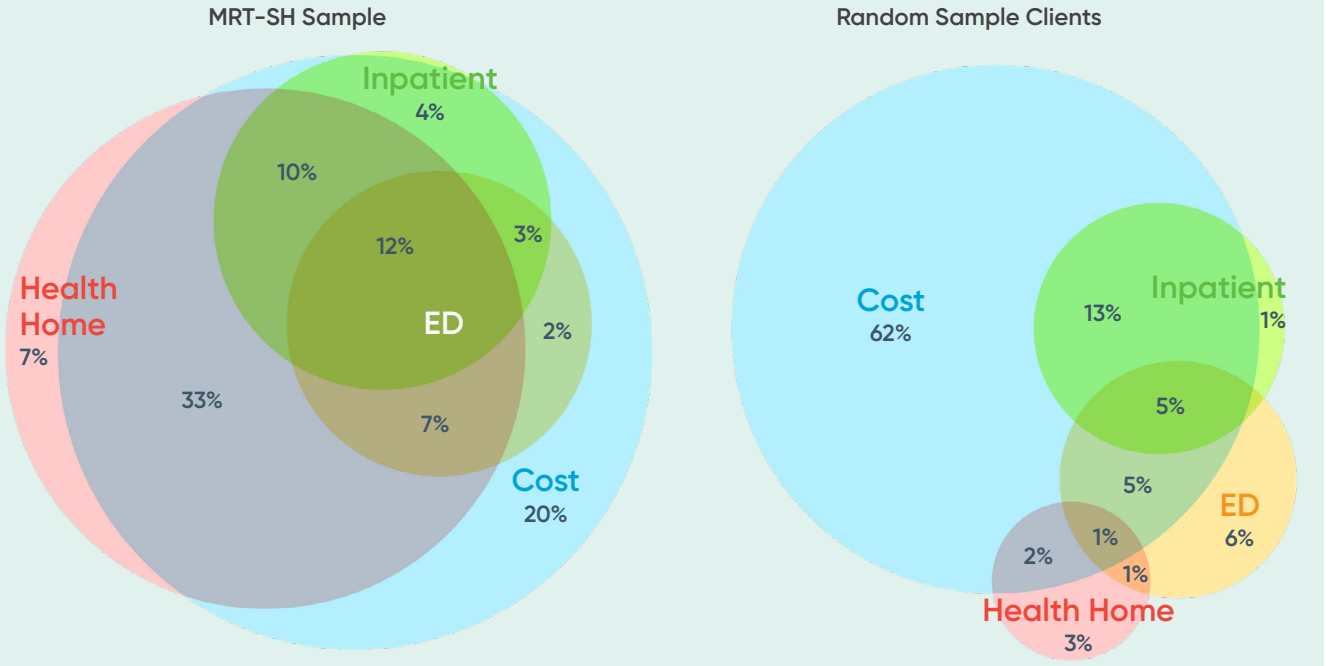


Table 17 shows how the characteristics of actual MRT-SH clients with chronic medical conditions would change using: 1) the current prioritization criteria, 2) a proposed change to using only the cost and ED criteria, and 3) a change to using only the cost and ED criteria with cost being based on the top 20% of clients with chronic medical conditions in the random sample. First, we see that there would be a moderate loss in the percentage of MRT-SH clients who would qualify under the proposed cost-or-ED criteria (from93% to 85%). However, if the cost threshold were based on the top 20% of spenders with chronic medical conditions, rather than the top 20% of all spenders, only 65% of current clients would qualify.

There would be minimal changes in the clinical and demographic profile of clients across the three different sets of criteria. Utilization would be somewhat higher using the diagnosis-specific cost criteria. The single substantial change would be in median costs among those who qualify, especially those who qualify under a diagnosis-specific cost criterion.

Table 17. Characteristics of MRT-SH Clients with Chronic Medical Conditions who Qualify under Selected Criteria

Overall n=3,132	Current criteria (n=2,903)	Top 20% cost (all RS) or ED visits >=5 (n=2,675)	Top 20% cost (chronic medical conditions clients) or ED visits >=5 (n=2,039)
Pct. Qualifying	**93%**	**85%**	**65%**
SMI	61%	63%	65%
SUD	40%	42%	44%
HIV	17%	18%	21%
Male	52%	52%	52%
Black	42%	42%	42%
Hispanic	9%	9%	10%
New York City	50%	51%	51%
Age at enrollment	52.9	52.5	52.5
Inpatient stays	1.7	1.8	2.2
Inpatient days	11.7	12.6	15.3
ED visits	4.2	4.4	5.5
Costs	$119,534	$129,225	$162,349
Health home	70%	68%	69%
Shelter use	23%	23%	21%
Psych inpatient	10%	10%	12%
SUD rehab	6%	6%	7%

Below are the characteristics of qualifying clients in the random sample who have chronic medical conditions, and how those characteristics would change under different prioritization measures. There were 13,925 clients identified in the random sample with chronic medical conditions. Of these, 47% would qualify under the current prioritization menu, 44% would qualify under an abbreviated prioritization menu, and only 26% would qualify under an abbreviated menu with a diagnosis-specific cost criterion.

The most interesting comparison is the comparison between the data in Table 18 and the first column in Table 17. The first column in Table 17 represents the profile of MRT-SH clients with chronic medical conditions largely as they exist now (excluding the 7% who did not qualify under any of the current criteria). Assuming that the program is currently doing a good job of targeting appropriate clients, we want to identify a set of criteria that, when applied to the random sample, would produce a set of potential clients with a similar profile.

Because there is otherwise little or no difference in the client profile produced by the three sets of criteria in Table 18, the primary question is which criteria would result in the more similar average cost to Table 17. In this case, the more restrictive criteria (the cost-or-ED, with cost based on clients with chronic medical conditions) produces the most similar client set. However, there are two important considerations. First, even the more restrictive criteria, when applied to the random sample, identifies clients with considerably lower average spending than the clients who were actually enrolled ($69,330 versus $119,534). When the same restrictive criteria is applied to the MRT-SH clients, the difference is exacerbated (as those clients then have an average spend of $162,349). *If clients with this level of spending are the desired client population, it should be recognized that the prioritization criteria explored in Table 18 will not, in and of itself, result in clients with this spending profile.*

Secondly, adopting the more restrictive criteria would suggest that 35% of the actual MRT-SH clients with HIV were not clients that should be prioritized in the future. Presumably these were the lower-spending clients (those lost between the second and third columns in Table 17). Whether or not excluding the lower-spending clients in the future is a desirable approach in terms of maximizing program effect will depend upon the results from Part II of this report.

Table 18. Characteristics of RS Clients with Chronic Medical Conditions who Qualify under Selected Criteria

Overall n=13,925	Current criteria (n=6,481)	Top 20% cost (all RS) or ED visits >=5 (n=6,147)	Top 20% cost (chronic medical conditions clients) or ED visits >=5 (n=3,630)
Pct. Qualifying	**47%**	**44%**	**26%**
SMI	30%	30%	33%
SUD	11%	11%	11%
HIV	4%	4%	4%
Male	39%	39%	40%
Black	25%	25%	26%
Hispanic	9%	9%	8%
New York City	59%	60%	58%
Age at enrollment	64.0	64.3	65.6
Inpatient stays	1.0	1.0	1.2
Inpatient days	5.9	6.1	8.5
ED visits	2.3	2.4	3.4
Costs	$46,943	$49,192	$69,330
Health home	8%	5%	6%
Psych inpatient	3%	3%	4%
SUD rehab	1%	1%	2%

In sum, a switch to a prioritization menu based only on costs and ED visits would not result in substantial changes to the client profile among either actual or potential MRT-SH clients with chronic medical conditions. However, if the cost percentile were to be calculated on Medicaid clients with chronic medical conditions, rather than Medicaid clients overall, this would result in a smaller targeting group with higher levels of spending. None of the prioritization criteria analyzed, when applied to the random sample, would produce a sample of potential clients that is comparable to actual MRT-SH clients in average level of costs.

Previously Homeless

In the MRT-SH program, 89% of the clients with at least one pre-period shelter stay meet at least one of the prioritization criteria. Of these, 89% do so under the cost criterion (alone or in combination with other criteria), while most of the remainder do so on the basis of health home enrollment.

Among all shelter users, 35% meet at least one of the prioritization criteria. Of these, 65% do so under the cost criterion (alone or in combination with other criteria), while 27% meet the health home criteria but not the cost criteria. Just over 5% do not meet the cost or the health home criteria, but meet the ED criterion.

Figure 7. Overlap between Prioritization Criteria, Qualifying MRT-SH Clients and Random Sample Clients with Shelter Stays

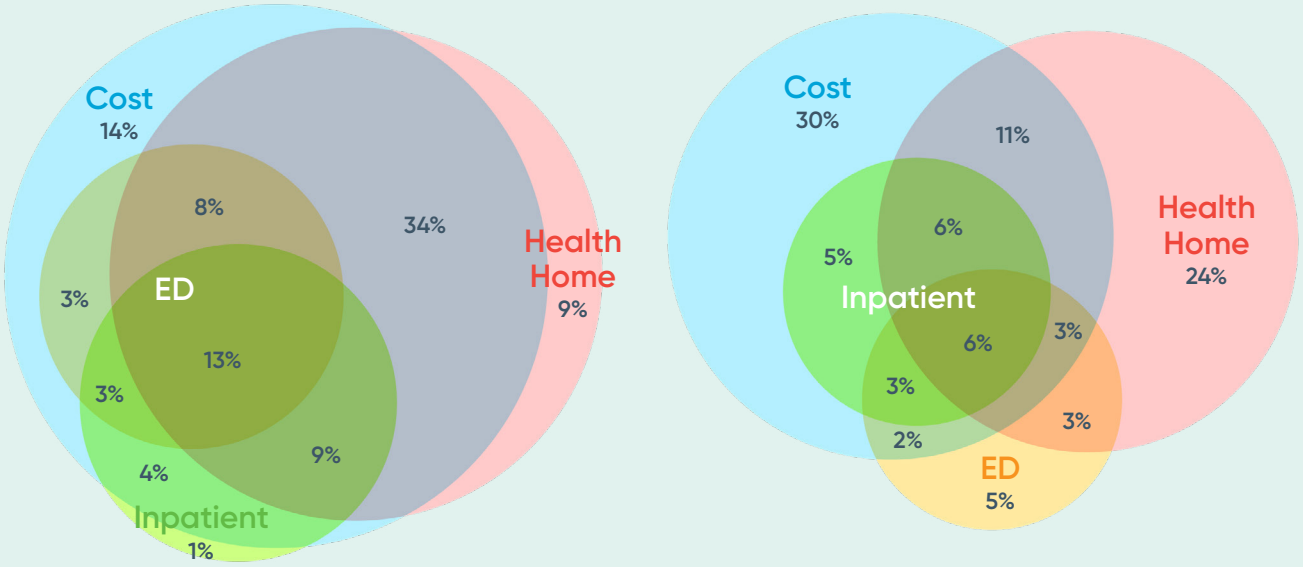


Table 19 shows how the characteristics of actual MRT-SH clients with a pre-period shelter stay would change using: 1) the current prioritization criteria, 2) a proposed change to using only the cost and ED criteria, and 3) a change to using only the cost and ED criteria with cost being based on the top 20% of clients in a sample of shelter users from New York City and eastern New York. A change to criteria based on ED visits and costs would result in a drop in eligibility from 89% to 80% of current MRT-SH clients with a shelter stay. If the cost threshold were based on the top 20% of spenders with a shelter stay, 73% would qualify. *There would not be a substantial change to the diagnostic or demographic profile of clients who qualified under any of the three sets of criteria, although median spending would be somewhat higher with the criteria based on ED use and* ***costs than*** *with the current criteria.*

Table 19. Characteristics of MRT-SH Clients with a Pre-Period Shelter Stay who Qualify under Selected Criteria

Overall n=1,266	Current criteria (n=1,135)	Top 20% cost (all RS) or ED visits >=5 (n=1,018)	Top 20% cost (w/ homeless history) or ED visits >=5(n=930)
Pct. Qualifying	**89%**	**80%**	**73%**
SMI	73%	74%	76%
SUD	56%	59%	61%
HIV	9%	10%	11%
Chronic condition	58%	61%	63%
Male	60%	60%	61%
Black	52%	50%	50%
Hispanic	6%	7%	7%
New York City	77%	77%	77%
Age at enrollment	46.2	46.2	46.4
Inpatient stays	1.9	2.1	2.3
Inpatient days	13.6	14.9	16.7
ED visits	4.5	4.9	5.3
Costs	$35,523	$40,082	$43,281
Health home	74%	72%	74%
Psych inpatient	12%	14%	14%
SUD rehab	9%	9%	10%

Below are the characteristics of qualifying clients with a shelter stay in the HMIS data, and how those characteristics would change under different prioritization menus. There were 10,579 clients identified in the HMIS data. Of these, 37% would qualify under the current prioritization menu, 27% would qualify under an abbreviated prioritization menu, and 22% would qualify under an abbreviated menu where cost was based only on those with a shelter stay.

The demographic profile of qualifying clients does not change much depending on the eligibility criteria, but the more restrictive sets of criteria result in clients with higher rates of SMI, SUD and chronic conditions. The cost and ED criteria also result in a client profile with more inpatient days, ED visits, and median spending; the cost criteria based on those with a shelter stay makes the difference even more pronounced.

In sum, a switch to a prioritization menu based only on costs and ED visits would not result in substantial changes to the

Table 20. Characteristics of HMIS Clients who Qualify under Selected Criteria

Overall n=28,954	Current criteria (n=10,579)	Top 20% cost (all RS) or ED visits >=5 (n=7,755)	Top 20% cost (w/ homeless history) or ED visits >=5 (n=6,450)
Pct. Qualifying	**37%**	**27%**	**22%**
SMI	53%	58%	60%
SUD	51%	56%	58%
HIV	4%	4%	5%
Chronic condition	59%	63%	65%
Male	56%	55%	57%
Black	56%	54%	53%
Hispanic	30%	30%	29%
New York City	87%	85%	84%
Age in 2016	41.5	41.8	42.0
Inpatient stays	1.17	1.49	1.68
Inpatient days	9.16	12.10	13.86
ED visits	3.22	4.00	4.61
Costs (median)	$15,662	$21,663	$26,280
Health home	53%	39%	41%
Psych inpatient	10%	13%	15%
SUD rehab	7%	8%	9%

Note: Includes only those with SSN match to Medicaid database

client profile among actual MRT-SH clients with shelter history (although fewer clients would qualify), but would result in a population of clients with modestly more comorbidities and higher resource use when applied to the overall HMIS population.

With an SMI. The first panel of Table 21 shows the characteristics of actual MRT-SH clients with a shelter history and an SMI. Under the current criteria, 94% would qualify, while under a menu based on ED visits and costs 86% would qualify. If the cost criteria is based on the top 20% of shelter users with SMI, however, the percent eligible drops to 59%. The client population qualifying under the most strict criteria had higher rates of SUD, HIV, and chronic conditions, as well as substantially higher utilization and spending compared to the other two sets of criteria.

The second panel of the table shows the characteristics of clients in the HMIS with an SMI who would qualify under the different criteria. Using criteria based on cost and ED visits would result in a drop in the percent eligible from 66% to 53%, but would not dramatically change the profile of client characteristics. Using a population-specific cost criteria, however, would result in a much smaller eligible client population (29%), as well as one with much higher levels of utilization and spending.

Table 21. Characteristics of HMIS Clients with SMI who Qualify under Selected Criteria

	MRT-SH (n=877)			HMIS (n=8,525)		
	Current criteria (n=828)	Top 20% cost (all RS) or ED visits >=5 (n=757)	Top 20% cost (w/ homeless history & SMI) or ED visits >=5 (n=517)	Current criteria (n=5,661)	Top 20% cost (all RS) or ED visits >=5 (n=4,537)	Top 20% cost (w/ homeless history & SMI) or ED visits >=5 (n=2,435)
Pct. Qualifying	**94%**	**86%**	**59%**	**66%**	**53%**	**29%**
SUD	61%	63%	70%	58%	63%	65%
HIV	9%	9%	11%	4%	4%	5%
Chronic condition	62%	62%	69%	62%	65%	67%
Male	57%	56%	57%	55%	56%	56%
Black	47%	47%	47%	51%	50%	50%
Hispanic	7%	8%	8%	31%	31%	28%
Age in 2016	45.3	45.2	45.7	41.4	41.7	41.5
New York City	78%	78%	76%	86%	85%	83%
Inpatient stays	2.2	1.6	2.9	1.4	1.6	2.5
Inpatient days	17.7	16.3	23.4	12.4	15.1	22.9
ED visits	5.1	3.9	6.8	3.5	4.1	6.9
Costs (median)	$38,963	$42,421	$61,525	$19,396	$24,972	$44,659
Health home	87%	76%	79%	55%	46%	51%
Psych inpatient	18%	22%	22%	18%	21%	28%
SUD rehab	9%	9%	11%	8%	9%	12%

Shelter users -- SMI – top 20% = $33,163

With an SUD. The first panel of Table 22 shows the characteristics of actual MRT-SH clients with a shelter history and SUD. Under the current criteria, 97% would qualify, compared to 92% under a criteria based only on ED visits and costs. If cost is based on shelter clients with SUD, however, only 70% would be eligible. There is not a large difference in diagnosis by eligibility criteria, but the most restrictive criteria has a somewhat higher rate of chronic conditions and a modestly older age. Utilization is only modestly higher under the most restrictive criteria, but cost is much higher.

The second panel of the table shows the characteristics of shelter users in the HMIS who have SUD under different eligibility criteria. The percent of this population who would qualify for MRT-SH drops from 65% to 53% with criteria based only on cost or ED visits, but to only 30% when the cost cutoff is population-specific. The prevalence of SMI and chronic conditions increase slightly with more restrictive criteria. The criteria based on cost and ED visits results in only modestly higher utilization and cost for eligible clients, but the population-specific cost criteria results in substantially higher utilization and spending.

Table 22. Characteristics of HMIS Clients with SUD who Qualify under Selected Criteria

	MRT-SH (n=658)			HMIS (n=8,339)		
	Current criteria (n=636)	Top 20% cost (all RS) or ED visits >=5 (n=605)	Top 20% cost (w/ homeless history & SUD) or ED visits >= 5 (n=463)	Current criteria (n=5,389)	Top 20% cost (all RS) or ED visits >=5 (n=4,401)	Top 20% cost (w/ homeless history & SMI) or ED visits >=5 (n=2,463)
Pct. Qualifying	**97%**	**92%**	**70%**	**65%**	**53%**	**30%**
SMI	78%	78%	81%	61%	65%	68%
HIV	11%	11%	13%	5%	5%	5%
Chronic condition	61%	62%	67%	65%	67%	70%
Male	69%	69%	69%	70%	69%	69%
Black	48%	47%	47%	50%	48%	48%
Hispanic	6%	6%	7%	31%	31%	29%
Age in 2016	46.0	46.1	46.6	43.1	43.3	43.1
New York City	73%	73%	73%	87%	87%	86%
Inpatient stays	2.8	2.9	3.4	1.7	1.9	2.7
Inpatient days	20.0	20.7	24.7	12.5	14.9	21.0
ED visits	5.5	5.7	7.1	4.0	4.6	7.5
Costs (median)	$44,387	$46,705	$61,525	$18,802	$23,478	$39,840
Health home	77%	77%	79%	52%	43%	49%
Psych inpatient	16%	17%	20%	12%	14%	21%
SUD rehab	16%	16%	15%	13%	15%	17%

Shelter users – SUD – top 20% = $30,580

With HIV. The first panel of Table 23 shows the characteristics of actual MRT-SH clients with a shelter history and HIV. Under the current criteria, 96% would qualify, compared to 93% under a criteria based only on ED visits and costs. If cost is based on shelter users with HIV, however, only 68% would be eligible. There is not a large difference in diagnostic profile by eligibility criteria, although the more restrictive criteria are associated with slightly higher prevalence of SMI. Utilization is only modestly higher under the most restrictive criteria, but cost is much higher.

The second panel of the table shows the characteristics of shelter users in the HMIS who have HIV under different eligibility criteria. The percent of this population who would qualify for MRT-SH drops from 71% to 60% with criteria based only on cost or ED visits, but to only 41% when the cost cutoff is population-specific. The criteria based on cost and ED visits results in only modestly higher utilization and cost for eligible clients, but the population-specific cost criteria results in substantially higher utilization and spending.

Table 23. Characteristics of HMIS Clients with HIV who Qualify under Selected Criteria

	MRT-SH (n=111)			HMIS (n=574)		
	Current criteria (n=107)	Top 20% cost (all RS) or ED visits >=5 (n=103)	Top 20% cost (w/ homeless history & HIV) or ED visits >=5 (n=75)	Current criteria (n=405)	Top 20% cost (all RS) or ED visits >=5 (n=346)	Top 20% cost (w/ homeless history & SMI) or ED visits >=5 (n=168)
Pct. Qualifying	**96%**	**93%**	**68%**	**71%**	**60%**	**41%**
SMI	65%	67%	69%	55%	57%	61%
SUD	63%	64%	65%	60%	63%	64%
Chronic condition	52%	52%	56%	77%	77%	83%
Male	65%	64%	61%	60%	60%	57%
Black	64%	64%	65%	66%	65%	69%
Hispanic	5%	4%	5%	23%	23%	21%
Age in 2016	44.9	45.0	44.7	42.1	42.4	43.4
New York City	75%	75%	77%	94%	93%	92%
Inpatient stays	2.2	2.3	2.9	1.3	1.5	2.2
Inpatient days	15.1	15.6	20.2	9.8	11.4	17.6
ED visits	3.8	3.9	5.1	2.9	3.2	5.3
Costs (median)	$68,675	$73,879	$93,038	$25,367	$30,760	$52,053
Health home	80%	80%	80%	52%	44%	52%
Psych inpatient	14%	15%	17%	10%	11%	16%
SUD rehab	8%	8%	11%	7%	8%	10%

Shelter users – HIV – top 20% = $43,802

With other chronic medical conditions. The first panel of Table 24 shows the characteristics of actual MRT-SH clients with a shelter history and a chronic medical condition. Under the current criteria, 95% would qualify, compared to 89% under a criteria based only on ED visits and costs. If cost is based on shelter users with HIV, however, only 72% would be eligible. There is not a large difference in diagnostic profile by eligibility criteria, although the more restrictive criteria are associated with slightly higher prevalence of SUD. Utilization is only modestly higher under the most restrictive criteria, but cost is much higher.

The second panel of the table shows the characteristics of shelter users in the HMIS who have chronic medical conditions under different eligibility criteria. The percent of this population who would qualify for MRT-SH drops from 56% to 45% based only on costs or ED visits, but to only 28% when the cost cut-off is population-specific. The criteria base on cost and ED visits results in moderately higher utilization and cost for eligible clients, but the population-specific cost criteria results in substantially higher utilization and spending.

Table 24. Characteristics of HMIS Clients with Chronic Conditions who Qualify under Selected Criteria

	MRT-SH (n=700)			HMIS (n=11,027)		
	Current criteria (n=665)	Top 20% cost (all RS) or ED visits >=5 (n=625)	Top 20% cost (w/ homeless history & chronic condition) or ED visits >= 5 (n=502)	Current criteria (n=6,223)	Top 20% cost (all RS) or ED visits >=5 (n=4,908)	Top 20% cost (w/ homeless history & SMI) or ED visits >=5 (n=3,049)
Pct. Qualifying	**95%**	**89%**	**72%**	**56%**	**45%**	**28%**
SMI	75%	76%	79%	56%	60%	61%
SUD	58%	60%	65%	56%	60%	61%
HIV	8%	9%	11%	5%	5%	6%
Male	59%	60%	60%	60%	57%	60%
Black	54%	53%	53%	58%	56%	56%
Hispanic	7%	7%	8%	30%	31%	28%
Age in 2016	48.9	48.8	48.8	45.2	45.2	45%
New York City	80%	80%	79%	92%	91%	89%
Inpatient stays	2.0	2.1	2.5	1.3	1.6	2.1
Inpatient days	15.8	16.7	20.2	10.5	13.1	18.1
ED visits	5.6	5.9	7.0	3.7	4.3	6.4
Costs (median)	$43,400	$47,013	$61,699	$18,282	$24,053	$38,431
Health home	76%	75%	78%	52%	40%	45%
Psych inpatient	13%	13%	16%	9%	11%	15%
SUD rehab	7%	8%	9%	7%	9%	11%

Shelter users – Chronic conditions – top 20% = $26,877

In sum, among MRT-SH clients with an identified shelter history, the prioritization criteria used would not result in much change to the demographic profile of clients. This is important as it indicates that changes in criteria would not bias the targeting of services towards or away from particular demographic groups.

Conclusions. Overall, changes in prioritization criteria would not result in a much different diagnostic profile, but some diagnostic groups would experience an increase in some comorbidities between criteria based on overall cost and ED visits and criteria based on population-specific cost and ED visits. Similarly, changes in prioritization criteria would result in only moderate changes in utilization of inpatient and ED services among shelter users overall and for most diagnostic subgroups, but shelter users with SMI would show substantially more utilization if selected with a population-specific cost cutoff compared to criteria based on overall costs.

Finally, for all groups, there was a large jump in average spending between those who would be selected based on overall costs and ED visits and those who would be selected based on population-specific cost cutoffs and ED visits.

Among Medicaid clients with a shelter history overall, the prioritization criteria would result in more pronounced differences in the profile of clients selected. Differences in demographics would be minimal, but some diagnostic groups would experience an increase in some comorbidities between selection based on the current criteria and on overall cost and ED visits. Utilization and costs increase with more selective criteria overall. Among the diagnostic subgroups, this increase is particularly pronounced between the population that would result from a criteria based on overall costs and ED visits and a criteria based on population-specific costs and ED visits.

Overall, the takeaway for clients with a shelter history is very similar as for clients overall. More restrictive selection criteria would not result in much change in the demographic profile, but would lead to a treatment population with somewhat higher rates of comorbidities, higher ED and inpatient utilization, and higher average spending. Even with the most restrictive criteria, however, the overall shelter user population would be lower-spending on average than those enrolled in the MRT-SH program.

Key Findings

- None of these prioritization criteria are a good substitute for any other single criterion, either among clients in the MRT-SH program or in the Medicaid population at large. However, nearly all of the clients who meet the inpatient criteria are captured by at least one other criteria, so that the inclusion of inpatient utilization as a prioritization criteria adds relatively few clients.
- People who qualify only because of their health home enrollment are not high-cost or high-utilizing clients. If high-cost, high-utilizing clients are the target group for MRT-SH, this criterion is not effective in capturing them.
- A failure to include clients who only meet the ED criterion under the prioritization menu will bias MRT-SH clients to be more male, more non-Hispanic white, and older. Those captured under the ED criterion only appear to represent a distinct group of high utilizers who meet the definition of a high utilizer but have a different demographic profile from those meeting other criteria, and who would not otherwise be captured by the MRT-SH programs.
- Dropping both the health home and inpatient criteria and basing the prioritization menu only on costs and ED visits would not dramatically change the character of the clients currently being served by MRT-SH. This simplified prioritization menu would be a more streamlined way to capture largely the same type of clients, while at the same time trimming out some of those who are less intensive users of resources.
- Using a criteria based on top 20% of spending in the specific population or five or more ED visits would result in substantially smaller percentages eligible for services, but would also result in more acute populations, with higher rates of comorbidities, more inpatient and ED use, and more pre-period spending.
- None of the prioritization criteria analyzed, when applied to the random sample, would produce a sample of potential clients that is comparable to actual MRT-SH clients in average level of costs. This would seem to suggest that programs are either targeting their services to a higher-cost population than the top 20%, or are using other – perhaps more subjective – indicators of need that are correlated in practice with higher spending.

Part II: Variation in Cost Savings Based on Prioritization Criteria

The Part II analyses will determine which prioritization criteria best predict supportive housing effectiveness as defined by cost savings of Treatment clients relative to a matched Comparison group clients, and whether this varies by client population.

METHODOLOGY

Sample

The Part II analyses are based on the propensity score-matched Treatment and Comparison group samples used for the Cost 2 and Outcomes 2 Volume 2 reports.

MRT-SH Treatment participants were included for analysis provided that they were enrolled prior to October 2016 in a program determined to be appropriate for a comparison group approach, and that for the period spanning from one year prior to program enrollment to one year after enrollment, they had full, continuous Medicaid coverage. Additionally, all clients were required to have at least one claim in one of the four major diagnostic categories (i.e., with a primary diagnosis of a serious mental illness (SMI), substance use disorder (SUD), HIV, or another chronic condition) during their pre-period year.

Comparison group participants were selected from a random sample of New York State Medicaid users who met these same coverage criteria and who had at least one claim in one of the four major diagnostic categories during their pre-period year between 2011 and 2017. All Treatment and Comparison clients were required to have some Medicaid spending in their pre-period year.

A matched set of comparison clients was then selected from this sample using a propensity score matching approach; see Comparison Group report for more detail. These procedures resulted in 2,037 pairs of unique Treatment and matched Comparison clients available for analysis.

Measures

The variables of interest in these analyses are the pre-post differences in total Medicaid spending, and the difference in the pre-post differences between the two groups. The latter metric represents the estimated treatment effect. In cases where both groups experience a spending decrease, the desired treatment effect exists if the Treatment group experiences a larger spending decrease than the Comparison group. In cases where both groups experience a spending increase, the desired treatment effect exists if the Treatment group experiences a smaller spending increase than the Comparison group. The clearest effect of all is evident if the Comparison group experiences a spending increase while the Treatment group experiences a spending decrease.

For an in-depth investigation of the treatment effects on Medicaid spending and other costs, see Cost Report 2 Volume 2 and Cost Report 3. The current analyses attempt to answer the research questions outlined above: what characteristics are associated with greater cost savings, and how can the MRT-SH program be targeted to those Medicaid clients who are expected to experience the greatest benefit?

Analyses

The first approach to predicting supportive housing effectiveness uses linear regression to model the effects of various characteristics on pre-post spending changes among MRT-SH clients. The models include diagnostic characteristics, demographic characteristics, and various aspects of pre-period spending and utilization. In particular, the characteristic involved in eligibility prioritization (pre-period Medicaid spending, pre-period ED, inpatient, and nursing home utilization, and pre-period Health Home enrollment are included).

Most of the variables are binary, but pre-period costs and client age are continuous. Both of these continuous variables are centered (pre-period cost centered on the median and age centered on the mean) in order to produce a more

meaningful intercept. For each diagnostic group, then, the intercept gives the expected pre-post change in costs for an MRT-SH client with a median level of pre-period spending, no co-occurring conditions and no pre-period utilization of the various types included, who is female, non-Black, non-Latino, with an average age, and who does not live in New York City.

The second approach takes the form of a series of regression decompositions. While the regression models shown below in Table 25 show what characteristics predict greater pre-post cost decreases (or increases) among MRT-SH Treatment clients, this does not show how the same characteristics affect pre-post cost changes among the Comparison group. There are two different potential sources of differences in any model of the effects of group membership on an outcome. The first is the difference in levels of the predictor characteristics between the two groups, and the second is the difference in the effects of those predictor characteristics on the outcome variable between the two groups. (The latter is essentially an interaction effect between group membership and the independent variables.) This is a key distinction in order to identify which characteristics of potential clients are associated with the most favorable treatment effects. For example, if greater pre-period spending is associated with greater cost savings in both the Treatment population and the Comparison population, enrolling more high-spenders in MRT-SH programs will result in greater cost savings for participants in those programs – but not necessarily because the programs worked better for high-spending clients. Part of that effect may be simply due to enrolling more people with characteristics that were associated with cost savings regardless of whether they were in the program.

In order to separate the effects of differential group characteristics from the effects of differential treatment effects associated with those characteristics, a technique called regression decomposition can be employed. Regression decomposition separates the effect of differential means from the effect of differential parameters for each predictor variable in a regression equation that is run for both groups, and also provides a breakdown of the total effects of different group characteristics versus different relationships between the independent and dependent variables between the two groups.

Finally, Part II will conclude with an examination of how treatment effects in the form of pre-post cost savings would vary depending on the implementation of different prioritization criteria.

RESULTS

Regression Analyses

As shown below in Table 25 only among clients with SMI does the intercept show a cost savings. *However, for clients in all four diagnostic categories, higher pre-period spending is associated with greater pre-post cost savings – $0.56 to $0.65 in reduced post-period costs for every dollar above the median in pre-period spending. The effect of pre-period spending is greatest for clients with an SUD or SMI and least for clients with another type of chronic medical condition, but is statistically significant for all four groups.*

Interestingly, co-occurring conditions have limited effects on pre-post levels of change. Among the clients with an SMI or an SUD, the presence of a co-occurring chronic medical condition is associated with an increase in post-period spending; while among clients with a chronic medical condition, the presence of a co-occurring SMI is associated with a decrease in post-period spending (in all cases these effects are net of all other variables).

Race/ethnicity is not related to pre-post changes in costs, but men have significantly greater reductions in cost among the SMI and SUD populations compared to women. Age is significantly associated with greater increases in costs for these same two populations. Residence in New York City is only associated with pre-post changes for the HIV population, who experience much greater pre-post cost increases if they are in New York City.

Most types of pre-period utilization are not statistically significant predictors of pre-post cost savings. The presence of pre-period inpatient or ED utilization is not significantly associated with the level of pre-post cost changes. Nor is health home enrollment. Spending time in a homeless shelter is associated with a significant increase in pre-post spending for the HIV population, while spending time in a nursing home is associated with a significant decrease in pre-post spending for the SMI population.

Table 25. Predictors of Pre-Post Cost Changes among MRT-SH Clients by Diagnosis

	SMI Pop.		SUD Pop.		HIV Pop.		Chronic pop.	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Intercept	-3074.96	1906.60	1118.83	3193.15	12118.036	11542.20	3478.05	3511.26
Pre-period costs (in dollars, median-centered)	-0.65***	0.02	-0.68***	0.027	-0.61***	0.1	-0.56***	0.03
Diagnoses (1=yes, 0=no)								
SMI	--	--	-3288.972	2171.86	8626.20	6689.53	-6368.81**	2410.86
SUD	-52.51	1452.67	--	--	-384.3	6697.6	400.99	2319.27
HIV	5785.38	3408.85	983.29	4279.95	--	--	-4519.05	4791.26
Chronic medical condition	2818.57*	1433.9	4884.34*	1960.71	-4058.16	6605.22	--	--
Demographics								
Black (1=yes, 0=no)	1149.39	1640.48	-3346.672	2303.69	8182.78	7637.47	4137.13	2548.96
Latino/a (1=yes, 0=no)	125.91	2057.08	-2130.578	2921.47	9329.56	9038.13	2880.27	3081.93
Male (1=yes, 0=no)	-2776.85*	1367.58	-4011.79*	1913.46	-4364.52	6530.86	-2017.20	2133.04
Age (in years, mean-centered)	154.59**	59.39	210.97*	87.30	264.98	280.27	143.91	97.37
New York City (1=yes, 0=no)	-1605.94	1713.96	2018.18	2399.97	-25278.60***	6840.96	-3231.33	2593.34
Pre-period utilization (1=yes, 0=no)								
ED visits	1978.90	1568.85	2995.17	2242.56	-5395.14	6933.15	4510.52	2513.05
Inpatient stays	2775.68	1577.95	1946.80	2082.72	-4426.81	6729.32	567.46	2421.46
Health home enrollment	1131.50	1373.84	-8.43	1885.98	-2417.80	6232.84	-306.74	2212.50
Shelter stays	-993.49	1652.65	107.30	2167.93	20477.97**	7530.52	-1675.17	2566.34
Nursing home stays	-12222.10*	5574.34	-14395.87	10635.70	n/a	n/a	-6908.44	5362.24

Note: There were no MRT-SH clients with HIV who had pre-period nursing home stays.

Table 26, below, shows that higher pre-period spending is associated with greater pre-post cost savings among pre-period shelter users – $0.64 in reduced post-period costs for every dollar above the median in pre-period spending.

Among the diagnostic categories, only an HIV diagnosis is significantly associated with pre-post spending changes. Shelter users with HIV experience a statistically significant spending increase compared to shelter users who do not have HIV. None of the demographic variables are significantly associated with pre-post spending changes except for residence in New York City, which was associated with a pre-post decrease in spending. Pre-period utilization of any type is not significantly associated with pre-post spending changes among shelter users.

Table 26. Predictors of Pre-Post Cost Changes among MRT-SH Clients With Pre-Period Shelter Stays

	B	S.E.
Intercept	1214.00	5259.56
Pre-period costs (in dollars, median-centered)	-0.64***	0.04
Diagnoses (1=yes, 0=no)		
SMI	-3669.25	3046.21
SUD	3178.41	2671.59
HIV	12197.44*	5634.30
Chronic medical condition	3317.58	2539.32
Demographics		
Black (1=yes, 0=no)	4982.24	3120.23
Latino/a (1=yes, 0=no)	1762.784	3666.36
Male (1=yes, 0=no)	-1493.88	2588.71
Age (in years, mean-centered)	32.81	110.58
New York City (1=yes, 0=no)	-8813.49**	3322.47
Pre-period utilization (1=yes, 0=no)		
ED visits	4224.08	2919.35
Inpatient stays	-308.77	2875.96
Health home enrollment	-2330.11	2525.32
Shelter stays	-14239.10	14012.36
Nursing home stays	4224.08	2919.35

In sum, many of the items that are part of the current prioritization menu are not significantly associated with more favorable outcomes within any of the diagnostic subgroups or for clients with pre-period shelter stays. Having ED visits or inpatient stays in the pre-period was not associated with a greater decrease in pre-post spending for any group. Nor was health home enrollment. Having a pre-period nursing home stay were associated with a significantly greater decrease in pre-post spending only among clients with an SMI.

Pre-period costs were significantly associated with decreases in pre-post spending in all groups, however – ranging from a decrease of $0.56 for each pre-period dollar among those with chronic medical conditions to a decrease of $0.68 for each pre-period dollar among those with an SUD. This supports the findings of the Cost reports that the highest-cost MRT-SH clients may experience the greatest benefits of treatment.

Regression Decomposition

The regression models presented above give us useful information on how various client characteristics, including those that make up the prioritization menu, are associated with pre-post decreases in spending among MRT-SH Treatment clients. However, these client characteristics may be associated with the same effect among Comparison clients as well, meaning that we could be expected to observe the same decrease for those clients whether or not they participated in the MRT-SH program.

The tables below (Tables 27-31) show the regression models presented above for the Treatment group compared to the same models for the Comparison group, with the differences decomposed into differences resulting from differentials in group *characteristics* and differences resulting from differentials in group *effects*. In this context, we can consider a treatment effect to exist when the treatment tends to ameliorate or even reverse the association of a variable with pre-post spending increases, or accentuates the association of a variable with pre-post spending decreases.

SMI. In Table 27, below, we see that the Comparison group with SMI has a somewhat higher level of pre-period spending on average than the Treatment group. Higher pre-period spending is associated with a greater pre-post decrease for both groups; however, the effect is larger for the Treatment group clients. While the effect is larger for the Treatment group, resulting in a differential of -$1,277 between the two groups (i.e., a larger pre-post decrease for the Treatment group), the higher average spending in the Comparison group results in a differential of $1,320 between the two groups (i.e., a larger pre-post *increase* for the Treatment group). When balancing the difference in group characteristics against the difference in effects between the two groups, the effect of pre-period spending on the differential outcome between the two groups in the analysis is minimal ($43). *However, the greater decrease in pre-post spending associated with higher pre-period spending for those who received the treatment implies that high-spending clients with SMI will benefit more from receiving the program, and that by enrolling more high-spending SMI clients, the program can maximize cost savings.*

The effect of co-occurring conditions for the SMI clients vary between Treatment and Comparison as well. The Comparison group has a somewhat higher prevalence of clients with a co-occurring SUD compared to the Treatment group (57% versus 51%), however a co-occurring SUD is associated with a pre-post spending increase of $440 for Comparison group clients but a pre-post spending decrease of $53 for Treatment group clients. When these two sources of group differences are balanced against one another, the effect of SUD on the differential outcome between the two groups in the analysis is a decrease of $279 in post-period spending. Most of this effect ($267) is due to the differential effect of SUD for the Treatment group.

The opposite is true for HIV among clients with SMI. The Treatment group has a slightly lower prevalence of HIV as a co-occurring condition, but for the Treatment group the presence of HIV is associated with an *increase* in spending between the pre- and post-periods, while for the Comparison group it is associated with a *decrease* in spending. This is consistent with other findings that clients with HIV appear to receive more services as a result of their enrollment in MRT-SH, and therefore their treatment effect takes the form of an increase in spending.

The same pattern for HIV is also found for other chronic medical conditions among clients with SMI, except the net effect is even larger – chronic medical conditions are responsible for a $2,357 increase in pre-post spending, compared to only $299 for HIV – due to their higher prevalence in both populations.

The demographics are nearly identical between the two groups of clients with SMI, but being Black is associated with a greater increase in pre-post spending for Treatment clients versus Comparison clients, while the opposite is true for being Latino/a. Being male is associated with an increase in pre-post spending for the Comparison clients, but a decrease in pre-post spending for the Treatment clients. Age has a similar effect for both groups. Living in New York City was associated with an increase in pre-post spending for Comparison group clients, but a decrease for Treatment clients.

Both ED visits and inpatient stays are associated with a greater increase in pre-post spending for Treatment clients than for Comparison group clients. Enrollment in a health home was associated with increased pre-post spending in both groups, but much more so in the Comparison group ($3,380) than the Treatment group ($1,132).

Shelter stays were associated with an increase in pre-post spending for the Comparison group, but a decrease for the Treatment group. Nursing home stays were associated with increased spending in both groups, but more so for the Comparison group than the Treatment group ($23,112 versus $12,222).

When the effect of differential means and differential effects for all variables are looked at in total, Treatment clients with an SMI are expected to save $4,104 more in pre-post spending compared to Comparison group clients. *Most of this is due to differential effects – various characteristics of the clients are associated with greater savings in the Treatment group than the same characteristics in the Comparison group.* To the extent that the means differ between the two groups, these group differences actually serve to reduce the observed savings.

Table 27. Decomposition of Regression Model Predicting Pre-Post Cost Changes among Comparison and Treatment Group Clients with an SMI

SMI Pop	Comparison (1)		Treatment (2)		Diff Parameters	Diff Means	
	B1	X1	B2	X2	ΔB	ΔX	T
Intercept	-4882.28		-3074.96		1807.32	0.00	1807.32
Pre-period spending	-0.55	13624.52	-0.65	11413.17	-1276.92	1320.17	43.25
SUD	440.36	0.57	-52.51	0.51	-267.48	-11.21	-278.69
HIV	-1288.52	0.05	5785.38	0.04	330.70	-31.70	299.00
Chronic medical condition	-2457.11	0.45	2818.57	0.44	2359.02	-1.83	2357.19
Black	199.90	0.33	1149.39	0.33	313.33	0.00	313.33
Latino	3740.16	0.16	125.91	0.17	-596.35	19.33	-577.02
Male	4169.73	0.54	-2776.85	0.53	-3716.42	-6.96	-3723.39
Age	196.90	-2.50	154.59	-2.49	105.46	1.56	107.03
Any ED visits	594.31	0.69	2775.68	0.67	1483.77	-19.88	1463.88
Any inpatient stays	-304.85	0.62	1978.90	0.52	1306.65	-85.96	1220.69
New York City	3085.28	0.47	-1605.94	0.47	-2204.87	0.00	-2204.87
Health Home	3379.97	0.43	1131.50	0.41	-936.94	-46.92	-983.86
Any shelter stay	913.90	0.22	-993.49	0.27	-462.06	-2.11	-464.17
Any nursing home	23111.83	0.14	-12222.10	0.02	-2791.38	-692.59	-3483.97
Total					**-4546.18**	**441.91**	**-4104.28**

SUD. In Table 28, below, we see that the Treatment group with SUD has a somewhat higher level of pre-period spending on average than the Comparison group. *Higher pre-period spending is associated with a greater pre-post decrease for both groups; however, the effect is larger for the Treatment group clients.* While the effect is larger for the Treatment group, resulting in a differential of -$1,365 between the two groups (i.e. a larger pre-post decrease for the Treatment group), the higher average spending in the Treatment group results in an additional differential of $3,043 between the two groups. Together, the differential level of pre-period spending and the differential effect of pre-period spending lead to an average decrease of $4,408 in pre-post spending.

The effect of co-occurring conditions for the SUD clients vary between Treatment and Comparison as well. Among Comparison group clients, the presence of an SMI in addition to an SUD is associated with an increase of $2,992 in pre-post spending, while among Treatment group clients a co-occurring SMI is associated with a decrease of $3,289 in pre-post spending. In contrast, HIV is associated with a decrease in pre-post spending among the Comparison group clients with SUD, but a small increase in pre-post spending among the Treatment group clients. The presence of another chronic medical condition is associated with an increase in pre-post spending for both groups, but the increase is much larger for Treatment versus Comparison clients.

Being Black and being Latino/a is associated with decreased pre-post spending in both groups, but the decrease is substantially larger for the Treatment than for the Comparison group. Being male is associated with an increase in pre-post spending for the Comparison group, but a decrease in the Treatment group. Older age is associated with an increase in pre-post spending in both groups (but somewhat more so in the Treatment group). Living in New York City is associated with an increase in pre-posts spending in both groups, but substantially less so for the Treatment group.

Both ED visits and inpatient stays are associated with an increase in pre-post spending for both Treatment and Comparison clients, but the increase in both cases is smaller for Treatment clients. Health home enrollment is associated with an increase in pre-post spending for the Comparison group, but a very, very small decrease in spending for the Treatment group.

Interestingly, shelter stays were associated with a decrease in pre-post spending for the Comparison group clients with SUD, but a small increase in pre-post spending for the Treatment group clients. (This may have to do with homeless clients with SUD being underserved by the health care system in the absence of an intervention, and may thus be a positive finding for this group.)

Nursing home stays were associated with an increase in pre-post spending for both groups, but a larger increase for the Treatment group compared to the Comparison group ($14,396 versus $8,940). The much smaller percentage of Treatment group clients with a nursing home stay, however, meant that the total effect of nursing home stays on pre-post spending was favorable to the Treatment group.

When the effect of differential means and differential effects for all variables are looked at in total, Treatment clients with an SUD are expected to save $4,500 more in pre-post spending compared to Comparison group clients. *Most of this is due to differential effects – various characteristics of the clients are associated with greater savings in the Treatment group than the same characteristics in the Comparison group.*

Table 28. Decomposition of Regression Model Predicting Pre-Post Cost Changes among Comparison and Treatment Group Clients with an SUD

SUD Pop	Comparison (1)		Treatment (2)		Diff Parameters	Diff Means	
	B1	X1	B2	X2	ΔB	ΔX	T
Intercept	-11321.22		1118.83		12440.05	0.00	12440.05
Pre-period spending	-0.56	8548.31	-0.68	13471.58	-1365.23	-3042.58	-4407.81
SMI	2992.15	0.83	-3288.97	0.76	-5023.32	10.37	-5012.95
HIV	-3929.35	0.07	983.29	0.05	280.76	28.13	308.89
Chronic medical condition	332.36	0.43	4884.34	0.44	1976.01	20.87	1996.88
Black	-1782.61	0.38	-3346.67	0.32	-547.42	153.88	-393.54
Latino	-329.18	0.15	-2130.58	0.15	-270.21	0.00	-270.21
Male	2853.29	0.68	-4011.79	0.63	-4496.63	28.96	-4467.66
Age	129.77	-6.37	210.97	-2.55	-362.14	650.45	288.31
Any ED visits	3763.48	0.76	2995.17	0.76	-585.26	1.01	-584.24
Any inpatient stays	2406.63	0.69	1946.80	0.65	-308.08	-84.89	-392.98
New York City	6238.43	0.51	2018.18	0.41	-1941.31	-412.83	-2354.14
Health Home	3655.86	0.47	-8.43	0.39	-1577.29	-135.50	-1712.79
Any shelter stay	-1884.92	0.29	107.30	0.31	604.14	-16.27	587.88
Any nursing home stay	8939.67	0.05	-14395.87	0.01	-632.39	106.40	-526.00
Total					**-1808.34**	**-2691.99**	**-4500.33**

HIV. Interestingly, many of the associations observed for clients with SMI or SUD are reversed among clients with HIV. In Table 29, below, we see that the Treatment group with HIV has a somewhat higher level of pre-period spending on average than the Comparison group. *Higher pre-period spending is associated with a greater pre-post decrease for both groups; however, the effect is larger for the Comparison group clients. This stands in contrast to the findings for the SMI and SUD populations.* While the effect is smaller for the Treatment group, resulting in a differential of $1,960 between the two groups (i.e., a larger pre-post increase for the Treatment group), the higher average spending in the Treatment group results in a differential of -$1,379 between the two groups. Together, the differential level of pre-period spending and the differential effect of pre-period spending lead to an average increase of $581 more for the Treatment group in pre-post spending.

The effect of co-occurring conditions for the HIV clients vary between Treatment and Comparison as well. Among Comparison group clients, the presence of an SMI in addition to HIV is associated with an increase of $108 in pre-post spending, while among Treatment group clients a co-occurring SMI is associated with a much larger increase of $8,626 in

pre-post spending. This differential is somewhat mitigated by the fact that the Comparison group clients are considerably more likely to have a co-occurring SMI than the Treatment clients. A co-occurring SUD is associated with a decrease in pre-post spending for both groups, but this decrease is much smaller for the Treatment group. A co-occurring chronic medical condition was associated with an increase in pre-post spending among the Comparison group clients with HIV, but with a decrease in pre-post spending among the Treatment group clients.

Being Black or Latino was associated with increased pre-post spending for both groups of clients. In both cases, however, the increase was smaller for the Treatment group clients. Being male was associated with an increase in spending for Comparison group clients, but a decrease for Treatment group clients. Older age was associated with an increase in pre-post spending for both groups of clients. Living in New York City was associated with an increase in pre-post spending for Comparison group clients, but a large decrease in spending for Treatment group clients. (This is likely, however, to be an artifact of the location of MRT-SH programs for clients with HIV.)

In contrast to the SMI and SUD populations, there appeared to be a differential effect of pre-period ED and inpatient use for the Treatment group clients. Pre-period ED visits were associated with a decrease in pre-post spending among both groups of clients, but the effect was considerably larger for clients in the Treatment group. Pre-period inpatient stays were associated with an increase in pre-post spending for Comparison group clients, but a decrease for Treatment group clients. Health home enrollment was also associated with an increase in spending for Comparison group clients but a decrease in spending for Treatment clients.

Shelter stays were associated with a decrease in pre-post spending for the Comparison clients, but a sizeable increase for the Treatment clients. (Again, this may be reflective of homeless clients with HIV receiving more appropriate levels of medical care as a result of MRT-SH programs.) There were no clients with HIV in the Treatment group with pre-period nursing home stays.

Table 29. Decomposition of Regression Model Predicting Pre-Post Cost Changes among Comparison and Treatment Group Clients with HIV

HIV Pop	RS(1)		MRT(2)		Diff Parameters	Diff Means	
	B1	X1	B2	X2	ΔB	ΔX	T
Intercept	-18851.14	0.00	12118.04	0.00	30969.17	0.00	30969.17
Pre-period spending	-0.85	7503.51	-0.61	9395.49	1960.28	-1379.25	581.03
SMI	107.94	0.82	8626.20	0.64	6210.66	-785.20	5425.46
SUD	-3313.80	0.70	-384.28	0.52	1773.38	332.27	2105.66
Chronic	3278.32	0.50	-4058.16	0.51	-3669.71	-3.90	-3673.61
Black	11012.06	0.52	8182.78	0.49	-1428.79	-287.92	-1716.71
Latino	10657.05	0.29	9329.56	0.22	-338.51	-699.53	-1038.04
Male	7925.00	0.70	-4364.52	0.64	-8233.98	-106.81	-8340.80
Age	345.71	-5.68	264.98	-0.64	255.32	1538.39	1793.70
Any ED visits	-1474.88	0.74	-5395.14	0.61	-2648.34	462.70	-2185.64
Any inpatient stays	6802.67	0.62	-4426.81	0.44	-5964.54	-208.72	-6173.26
New York City	10986.58	0.80	-25278.60	0.58	-25022.98	1572.12	-23450.85
Health Home	8332.28	0.30	-2417.80	0.55	-4575.23	714.47	-3860.77
Any shelter stay	-12395.54	0.36	20477.97	0.27	10353.51	-379.47	9974.04
Any nursing home stay	13578.07	0.02	0.00	0.00	-128.99	-128.99	-257.98
Total					**-488.73**	**640.14**	**151.41**

Chronic Medical Conditions. In Table 28, below, we see that the Treatment group with chronic medical conditions has a somewhat lower level of pre-period spending on average than the Comparison group. This is in contrast to the other diagnostic groups. *Higher pre-period spending is associated with a greater pre-post decrease for both groups; however, the effect is larger for the Comparison group clients than for the Treatment clients.*

The effect of co-occurring conditions for the clients with chronic medical conditions vary between Treatment and Comparison as well. *A co-occurring SMI is associated with an increase in pre-post spending for the Comparison group clients, but a decrease for the Treatment clients. The same is true for HIV. A co-occurring SUD is associated with an increase in pre-post spending for both groups, but the increase is considerably smaller for the Treatment clients.*

Being Black or Latino is associated with an increase in pre-post spending for Treatment group clients with chronic conditions, but the increase is smaller for Latinos in the Comparison group, and Black clients in the Comparison group actually experience a very small decrease. Being male was associated with a minor decrease in pre-post spending for Comparison group clients, but a more substantial decrease for Treatment clients. Age was associated with an increase in spending for both groups, but the increase was somewhat less for Treatment clients. Living in New York City was associated with an increase in pre-post spending for the Comparison clients, but a decrease in spending for the Treatment clients.

ED visits were associated with a substantial increase in pre-post spending for Treatment clients, but a very minor decrease for Comparison group clients. *Inpatient stays were associated with an increase in spending for both groups, but much smaller increase for the Treatment clients.* Health home enrollment was associated with a spending increase for Comparison group clients, but a modest spending decrease for Treatment clients.

Shelter stays for this population were associated with a decrease in pre-post spending, but a larger decrease for Treatment clients. Nursing home stays were associated with a quite large increase in pre-post spending for the Comparison group clients, but a decrease for Treatment group clients.

Overall, both the differential characteristics of the populations and the differential effects of those characteristics led to greater cost savings for the Treatment group.

Table 30. Decomposition of Regression Model Predicting Pre-Post Cost Changes among Comparison and Treatment Group Clients with Chronic Medical Conditions

Chronic	RS(1)		MRT(2)		Diff Parameters	Diff Means	
	B1	X1	B2	X2	ΔB	ΔX	T
Intercept	-8037.92		3478.05		11515.97	0.00	11515.97
Pre-period spending	-0.66	18384.62	-0.56	16978.73	1891.94	856.89	2748.83
SMI	2519.26	0.68	-6368.81	0.69	-6105.22	-18.48	-6123.70
SUD	2103.81	0.44	400.99	0.46	-770.35	20.29	-750.07
HIV	1159.82	0.05	-4519.05	0.05	-278.55	0.17	-278.38
Black	-50.90	0.36	4137.13	0.41	1612.39	102.16	1714.54
Latino	717.51	0.18	2880.27	0.22	432.55	71.96	504.51
Male	-105.33	0.52	-2017.20	0.54	-1013.29	-21.23	-1034.52
Age	190.48	5.97	143.91	2.85	-205.50	-521.50	-726.99
Any ED visits	-19.72	0.69	4510.52	0.70	3133.80	26.72	3160.52
Any inpatient stays	2142.96	0.62	567.46	0.53	-909.93	-122.10	-1032.03
New York City	4974.35	0.53	-3231.33	0.55	-4431.06	17.43	-4413.63
Health Home	3310.20	0.37	-306.74	0.39	-1359.06	31.99	-1327.08
Any shelter stay	-531.76	0.20	-1675.17	0.26	-265.90	-65.66	-331.56
Any nursing home stay	27338.63	0.22	-6908.44	0.05	-4503.49	-1746.78	-6250.27
Total					**-1255.71**	**-1368.15**	**-2623.85**

Shelter Stays. In Table 31, below, we see that the Treatment group with shelter stays has a higher level of pre-period spending on average than the Comparison group. *Higher pre-period spending is associated with a greater pre-post decrease for both groups; however, the effect is substantially larger for the Treatment clients than for the Comparison clients.*

The effect of the various diagnostic conditions for the clients with shelter stays vary between Treatment and Comparison as well. For the Comparison group clients, a diagnosis of SMI is associated with an increase in pre-post spending. *In contrast, an SMI diagnosis is associated with a decrease in spending for Treatment clients.* Clients with an SUD or a chronic medical condition experience an increase in pre-posts spending in both groups, but this increase is somewhat larger for the Treatment clients in both cases. A diagnosis of HIV is associated with a decrease in spending for Comparison group clients, but a sizeable increase among Treatment clients.

Being Black or Latino is associated with a decrease in pre-post spending for the Comparison group, but an increase for the Treatment group. Being male, in contrast, is associated with an increase in spending for the Comparison group but a decrease for the Treatment group. Older age is associated with spending increases, but these are larger for the Comparison group. *Living in New York City is associated with a spending increase among the Comparison group, but a spending decrease among the Treatment group.*

Pre-period ED visits are associated with an increase in pre-post spending for both groups, but larger for the Treatment group. Pre-period inpatient stays are associated with decreases for both groups, but smaller for the Treatment group. Health home enrollment is associated with a pre-post spending increase for the Comparison group, but a decrease for the Treatment group. Finally, nursing home stays are associated with a quite large increase in spending for the Comparison group, but an even larger decrease in spending for the Treatment group.

Overall, both the effects of differential characteristics and differential effects of those characteristics favor a larger pre-post decrease in spending for the Treatment group.

Table 31. Decomposition of Regression Model Predicting Pre-Post Cost Changes among Comparison and Treatment Group Clients with Pre-Period Shelter Stays

HMIS	RS(1)		MRT(2)		Diff Parameters	Diff Means	
	B1	X1	B2	X2	ΔB	ΔX	T
(Constant)	-17751.14		1214.00		18965.13	0.00	18965.13
Pre-period spending	-0.46	6593.66	-0.64	8388.34	-1400.82	-984.38	-2385.20
SMI	13059.86	0.85	-3669.25	0.79	-13694.45	-273.27	-13967.71
SUD	1948.53	0.79	3178.41	0.62	865.65	-447.84	417.81
HIV	-4254.62	0.09	12197.44	0.05	1170.56	-176.73	993.84
Chronic medical condition	753.80	0.53	3317.58	0.49	1308.55	-72.88	1235.67
Black	-1657.35	0.46	4982.24	0.46	3054.21	0.00	3054.21
Latino	-870.30	0.22	1762.78	0.22	579.28	0.00	579.28
Male	5032.35	0.70	-1493.88	0.64	-4372.57	-106.15	-4478.73
Age	251.77	-6.34	32.81	-0.51	749.32	829.11	1578.43
Any ED visits	2687.80	0.78	4224.08	0.73	1165.20	-175.22	989.98
Any inpatient stays	-1770.76	0.70	-308.77	0.53	894.81	178.32	1073.13
New York City	2425.78	0.75	-8813.49	0.77	-8541.84	-63.88	-8605.72
Health Home	1825.52	0.51	-2330.11	0.39	-1865.25	30.15	-1835.10
Any nursing home stays	12090.82	0.02	-14239.10	0.01	-389.68	15.68	-374.00
Total					**-1511.91**	**-1247.07**	**-2758.98**

Conclusions. In sum, the regression decompositions add to our knowledge of optimal targeting by highlighting which client characteristics are associated with greater cost savings for the Treatment group relative to the Comparison group within different client populations. Of particular interest are the characteristics that are included in the prioritization menu.

Pre-period spending is more strongly associated with pre-post cost decreases for the Treatment than for the Comparison group among those with an SMI or an SUD, or among shelter users. In contrast, among clients with HIV or chronic medical conditions, higher pre-period spending is more strongly associated with pre-post cost decreases among the Comparison group relative to the Treatment group.

Having pre-period inpatient stays is associated with pre-post cost increases among clients with SUD and chronic medical conditions, but this relationship is ameliorated somewhat for Treatment clients relative to Comparison group clients. Among clients with HIV, pre-period inpatient stays are associated with decreased pre-post spending for Treatment clients but increased pre-post spending for Comparison group clients. In contrast, pre-period inpatient stays are associated with pre-post increases for Treatment clients with an SMI, but *decreases* for Comparison group clients with an SMI. Thus, pre-period inpatient stays are associated with better Treatment outcomes for clients with SUD, chronic medical conditions, and HIV relative to the Comparison group, but poorer outcomes for clients with SMI. Clients with previous shelter stays also experience less of a reduction in pre-post spending associated with inpatient stays in the Treatment group relative to the Comparison group.

Pre-period ED visits are associated with pre-post increases in spending for both Treatment and Comparison clients with SMI and SUD, and clients with shelter stays. However, the spending increase is greater for Treatment clients with SMI and with previous shelter stays relative to Comparison clients, while the spending increase is less for Treatment clients with SUD relative to Comparison clients. Clients with HIV have a pre-post decrease in costs associated with pre-period ED visits, but the decrease is considerably larger for the Treatment than for the Comparison clients. Clients with chronic medical conditions have a pre-post increase in costs associated with pre-period ED visits among the Treatment clients, but not the Comparison clients.

Being in a health home is associated with a pre-post increase in spending for clients with an SMI, but this increase is smaller for those in the Treatment group. Among those with an SUD, with HIV, with another chronic medical condition, or with shelter stays, being in a health home is associated with a pre-post spending increase for Comparison group clients, but not for Treatment clients. (Treatment clients with HIV or pre-period shelter stays actually have a substantial decrease in spending associated with health home enrollment.)

Finally, nursing home stays are associated with pre-post spending increases for Comparison clients in all groups, but are associated with pre-post spending *decreases* for Treatment clients in all groups except HIV (where none of the Treatment clients had pre-period nursing home use).

Treatment Effects by Different Prioritization Criteria

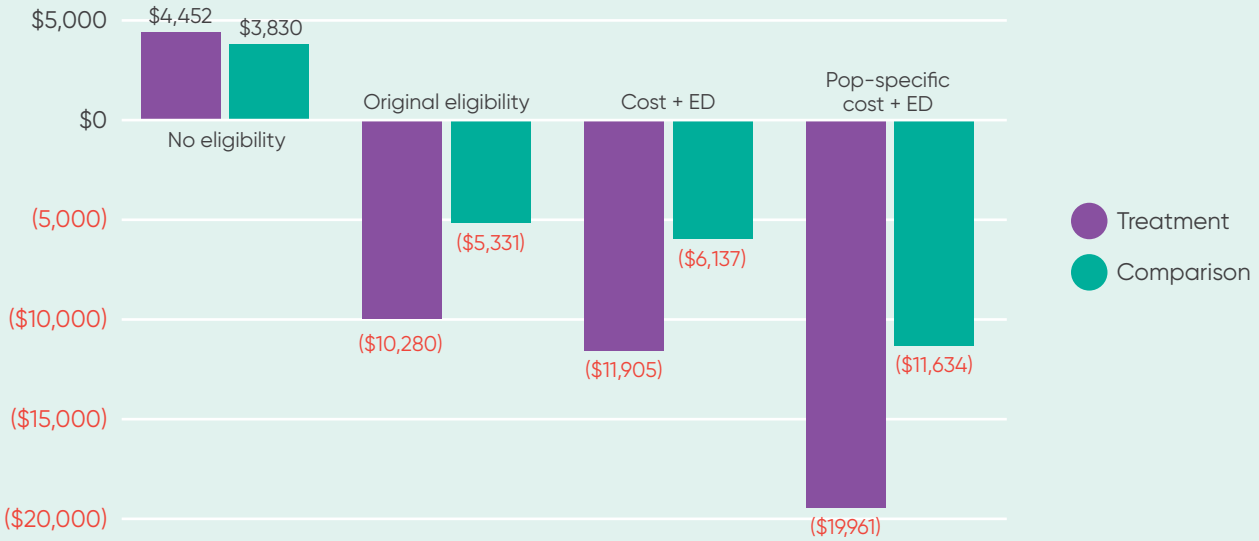
Among both the Treatment group and Comparison group used in the propensity score-matched sample, 85% of the sample met one of the set of prioritization criteria. There were clear differences in pre-post spending and in treatment effects between those clients who did and did not meet one of the eligibility criteria. Treatment clients with none of the current eligibility criteria experienced a pre-post increase of $5,320 in spending, while Comparison clients experienced a pre-post increase of only $2,725. Among those who met at least one of the current eligibility criteria, however, the Treatment clients experienced an average pre-post decrease of $8,994 in spending, compared to a decrease of $4,795 among the Comparison group clients (i.e., an estimated treatment effect of $4,199 in savings for the Treatment clients).

When a more restrictive set of criteria were applied (either the top 20% of costs or 5 or more ED visits), the cost decrease for Treatment clients increased to $10,596, compared to $6,173 for Comparison group clients (an estimated treatment effect of $4,423 for the Treatment clients). Although the savings for the Treatment clients was larger in raw dollars with the more restrictive eligibility criteria, the savings of the Treatment group proportional to the Comparison group was greater with the current prioritization menu. (The Treatment group savings was 88% higher than the Comparison group savings under the current prioritization menu, versus only 72% higher under the more restrictive menu.)

Figure 8. Pre-Post Changes in Spending, Treatment vs. Comparison Group, by Eligibility Criteria

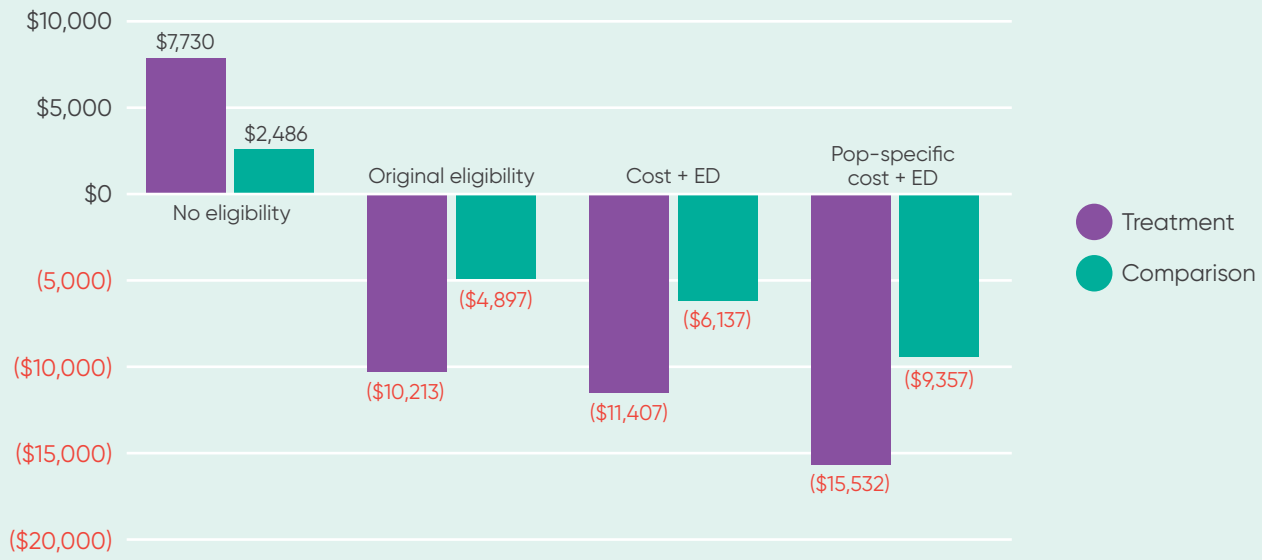
Among the SMI population there was a similar result. Eighty-seven percent of the Treatment clients and 88% of the Comparison clients met at least one of the current prioritization menu criteria. Among those who did not meet any of the criteria, costs increased between the pre- and post-periods (by $4,452 for Treatment and $3,830 for Comparison). Among those eligible among the current prioritization menu, however, Treatment clients experienced a pre-post spending decrease of $10,280 compared to $5,331 among Comparison clients (a treatment effect of $4,949 and a 93% greater savings for the Treatment group). Among those who would be eligible under a menu based on costs and ED visits, the Treatment clients experienced a pre-post decrease of $11,905 compared to $6,137 among the Comparison clients (a treatment effect of $5,768; a 94% greater savings). Finally, if the cost criteria was based on costs for the SMI population, the Treatment clients experienced a spending decrease of $19,961 compared to $11,634 among the Comparison clients (a larger treatment effect in dollars [$8,327], but only a 72% greater savings for the Treatment versus Comparison clients).

Figure 9. Pre-Post Changes in Spending, Treatment vs. Comparison Group with SMI, by Eligibility Criteria



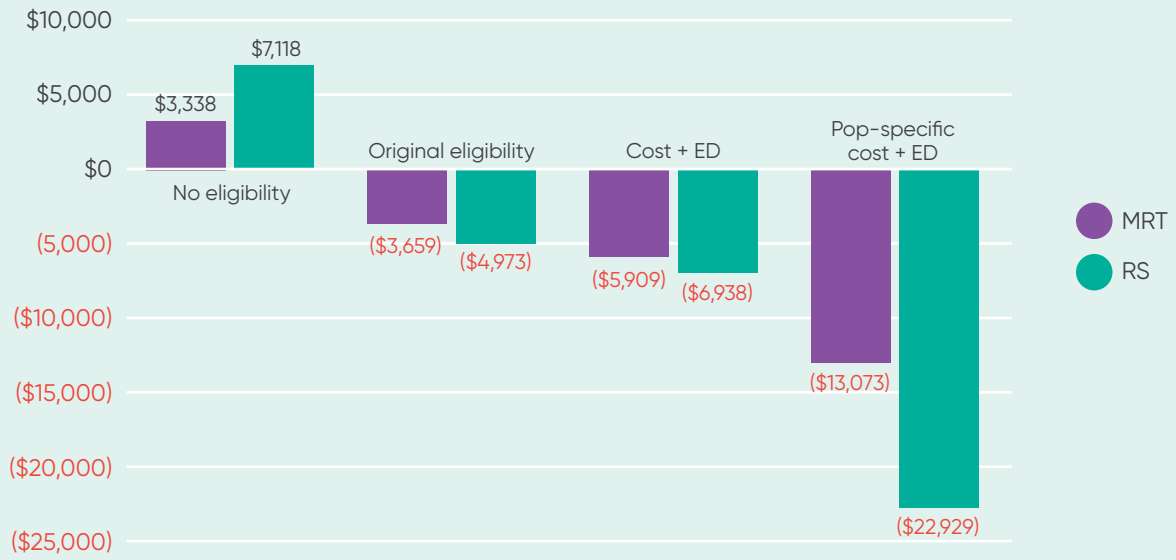
Among the SUD population, 90% of the Treatment group clients and 89% of the Comparison group clients met at least one of the current prioritization criteria. Among those who do not meet one of the criteria, both groups experience a pre-post increase in spending, and the increase is much larger for the Treatment group ($7,730 versus $2,486). Among those who meet at least one of the criteria, however, the Treatment clients experience a pre-post decrease of $10,213, compared to $4,897 for the Comparison group (a treatment effect of $5,316 and a decrease that is 109% higher for the Treatment group). Among those who meet either the cost or the ED visit criteria, the Treatment clients experience a decrease of $11,407, compared to $6,137 among the Comparison group clients (a decrease that is 86% higher). If the cost criteria is based on costs for clients with SUD, the pre-post decrease is larger for both groups ($15,532 for the Treatment group and $9,357 for the Comparison group), but the decrease is only 66% higher among the Treatment group.

Figure 10. Pre-Post Changes in Spending, Treatment vs. Comparison Group with SUD, by Eligibility Criteria



Among the clients with HIV, 90% of the Treatment clients and 85% of the Comparison group clients meet at least one of the criteria for the current prioritization menu. Among the clients who do not, the Treatment clients experienced an average pre-post increase of $3,338, while the Comparison group clients experienced an average pre-post increase of $7,118. Among those who meet at least one of the current criteria, however, the Comparison group experienced a larger pre-post decrease than the Treatment group ($4,973 versus $3,659). This is in contrast to the pattern among the other diagnostic groups, but consistent with other evidence that suggest that the HIV population receives more services rather than fewer as a result of MRT-SH enrollment compared to a group of similar Medicaid clients who are not enrolled. The pattern strengthens when criteria are limited to costs or ED visits – the Comparison group experiences a decrease of $6,938 between the pre- and post-periods, but the Treatment group experiences a decrease of only $5,909. The pre-post decrease is much larger for both groups when the top 20% of spending is based on HIV clients, but again the Comparison group has a much larger decrease than the Treatment group ($22,929 versus $13,073).

Figure 11. Pre-Post Changes in Spending, Treatment vs. Comparison Group with HIV, by Eligibility Criteria

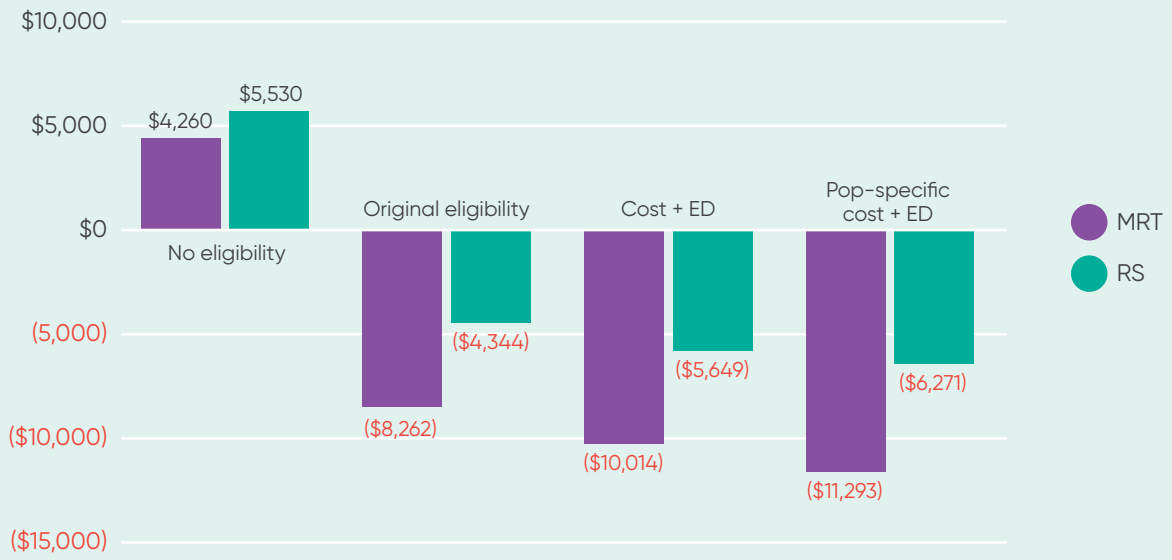


Among clients with at least one chronic medical condition other than HIV or behavioral health conditions, 88% in both the Treatment and Comparison groups meet at least one of the criteria on the current prioritization menu. Among those who do not meet the criteria, clients in both groups experience an average pre-post increase in spending ($4,310 for the Treatment clients and $3,556 for the Comparison clients). Among those who do meet at least one of the criteria, however, the Treatment group experiences a pre-post decrease of $9,706 compared to a decrease of only $6,548 among the Comparison group (the Treatment group decrease is 48% larger than the decrease for Comparison clients). When the criteria are limited to either costs or ED visits, the Treatment group experienced a decrease of $10,907 compared to $7,761 for the Comparison group (the Treatment group decrease is 41% larger than the Comparison group decrease). And when the cost criteria is based on clients with a chronic medical condition, the Treatment group experienced a decrease of $18,158 compared to $12,831 for the Comparison group (the Treatment group decrease is 42% larger than the Comparison group decrease).

Figure 12. Pre-Post Changes in Spending, Treatment vs. Comparison Group with Chronic Medical Conditions, by Eligibility Criteria

Among clients with a shelter history, 82% of the Treatment clients and 89% of the Comparison group clients met at least one of the criteria on the current prioritization menu. Among those who did not, the Treatment clients experienced a pre-post increase of $4,260 in spending, compared to an increase of $5,530 among the Comparison group. Among those who did, however, the Treatment group experienced a spending decrease of $8,262 compared to $4,344 among the Comparison group (a 90% greater decrease for Treatment clients). Among those who met either the cost or ED criteria, the average decrease for Treatment clients was $10,014 compared to $5,649 for Comparison clients (a 77% larger decrease for Treatment clients). And when the cost criteria was based on clients with a shelter history, the Treatment group had an average decrease of $11,293 compared to $6,271 for the Comparison group (a decrease that was 80% larger for Treatment).

Figure 13. Pre-Post Changes in Spending, Treatment vs. Comparison Group with Shelter History, by Eligibility Criteria



In sum, for all subgroups of clients except those with HIV the largest cost savings in raw dollars between the Treatment versus the Comparison group would be realized by using the most restrictive prioritization criteria (clients who are either in the top 20% of population-specific costs or have 5 or more ED visits). However, these clients also have the highest pre-period spending, as evident in Part I of the report. Thus, they would also be expected to experience greater regression to the mean than clients selected by less restrictive criteria. This is why it is also useful to look at the Treatment cost savings proportionate to the Comparison cost savings as a measure of effect size. Using this metric, the larger proportional effect often results from less restrictive criteria. To understand the relative effectiveness of the program under different criteria, the proportional measure is probably better. From a policy perspective, however, it may be more desirable to maximize cost savings in raw dollars.

Key Findings

- Many of the items that are part of the current prioritization menu are not significantly associated with more favorable outcomes within any of the diagnostic subgroups or for clients with pre-period shelter stays. Having ED visits or inpatient stays in the pre-period was not associated with a greater decrease in pre-post spending for any group. Nor was health home enrollment. Having a pre-period nursing home stay was associated with a significantly greater decrease in pre-post spending only among clients with an SMI.
- Pre-period costs were significantly associated with decreases in pre-post spending in all groups. The greater decrease in pre-post spending associated with higher pre-period spending for those who received the treatment implies that high-spending clients will benefit more from receiving the program, and that by enrolling more high-spending clients, the program can maximize cost savings.
- Certain client characteristics are associated with greater cost savings for the Treatment group relative to the Comparison group within different client populations.
    - » Pre-period spending is more strongly associated with pre-post cost decreases for the Treatment than for the Comparison group among those with an SMI or an SUD, or among shelter users. In contrast, among clients with HIV or chronic medical conditions, higher pre-period spending is more strongly associated with pre-post cost decreases among the Comparison group relative to the Treatment group.
    - » Being in a health home is associated with a pre-post increase in spending for clients with an SMI, but this increase is smaller for those in the Treatment group. Among those with an SUD, with HIV, with another chronic medical condition, or with shelter stays, being in a health home is associated with a pre-post spending increase for Comparison group clients, but not for Treatment clients (Treatment clients with HIV or pre-period shelter stays actually have a substantial decrease in spending associated with health home enrollment).
    - » Finally, nursing home stays are associated with pre-post spending increases for Comparison clients in all groups, but are associated with pre-post spending decreases for Treatment clients in all groups except HIV (where none of the Treatment clients had pre-period nursing home use).
- In sum, for all subgroups of clients, except those with HIV the largest cost savings in raw dollars between the Treatment versus the Comparison group would be realized by using the most restrictive prioritization criteria (i.e., clients who are either in the top 20% of population-specific costs or have 5 or more ED visits).
    - » However, these clients also have the highest pre-period spending, as evident in Part I of the report. Thus, they would also be expected to experience greater regression to the mean than clients selected by less restrictive criteria. This is why it is also useful to look at the Treatment cost savings proportionate to the Comparison cost savings as a measure of effect size.
    - » Using this metric, the larger proportional effect often results from less restrictive criteria. To understand the relative effectiveness of the program under different criteria, the proportional measure is probably better. From a policy perspective, however, it may be more desirable to maximize cost savings in raw dollars.

Part III: Stakeholder Feedback

The purpose of the Part III analyses is to synthesize stakeholder feedback to inform targeting practices. Qualitative data from the implementation study are analyzed to determine provider perspectives on groups who are benefiting the most from supportive housing.

Specifically, this section of the report will:

- Describe the perspectives offered by program administrators and staff regarding participant subgroups who are benefiting most from supportive housing, as well as those who are most challenging to serve;
- Summarize the barriers to serving subgroups identified as challenging (e.g., level of need, gaps within the supports currently available, etc.); and
- Provide policy and practice recommendations on ways to tailor targeting practices to capture those who appear to be benefiting the most.

METHODOLOGY

In collaboration with DOH, the evaluation team selected provider sites for qualitative data collection. A list of potential provider sites for inclusion was generated in the Implementation Study, based on responses to the Implementation Survey. The shortlist consisted of provider sites that were serving target populations of special interest to DOH, as well as those engaged in innovative practices. In some cases, preliminary evaluation findings were taken into consideration, such as if providers showed early indications of cost savings. Agency directors were also consulted regarding site inclusion, based on their knowledge of program operations. Providers were chosen from almost all of the MRT-SH funded programs to ensure representation of the full complement of initiatives.

The qualitative data collection[5] consisted of program manager/administrative interviews, focus groups with program staff, and focus groups with service recipients, as detailed below.

Program Manager/Administrative Interviews

Program manager and administrative interviews were conducted by phone. A member of the research team reached out to the program manager of each site via email and provided a description of the study. The program manager was asked to participate in a phone interview and to extend an invitation to other administrative staff, as relevant.

The interviews, which were guided by a semi-structured interview protocol, lasted between 60 and 90 minutes. In addition to the items that all program managers were asked, the interview protocol had specific questions tailored to each program. Probes were used as appropriate to yield further information. The interviews were audio-recorded, with permission of the individuals interviewed, following an informed consent procedure. As described in the table below, 38 administrative staff (program managers and other administrators) participated in the interviews.

Table 32. Number of Administrative Staff Interviewed, by Site

Site	Number of Staff
ACR Health	2
Bridging Access to Care	2
CAMBA Gardens	3
East 99th Street	2
Evergreen Health Services	5
Opportunities for Broome	2
Living Opportunities of DePaul	1
Unity House of Troy	2
Saint Joseph's Medical Center	2
Chautauqua County ARC	3
Lexington Center	1
Olmstead Housing Subsidy	2
Federation of Organizations	3
Rebuilding Together Saratoga County	1
Ithaca Housing Authority	4
Total	**40**

[5] In some cases, sites participated in program manager interviews only, rather than focus groups. This situation occurred when additional sites were selected to further contextualize program implementation or when providers were small non-profits without a full staff. These details are noted in the report text where appropriate.

Focus Groups

The focus groups were conducted in person at the provider locations. Staff[6] and service recipient focus groups were held separately. The focus groups were guided by a semi-structured focus group protocol, tailored to the specific stakeholder group (staff or service recipients) and the nature of each program. For the purposes of this report, only staff focus groups are discussed. This is because of the report's focus on identifying groups of clients who may benefit the most from supportive housing. Focus groups typically lasted between 60 and 90 minutes. Focus groups were audio-recorded, with permission of the participants, following an informed consent procedure. As indicated in the tables below, 65 program staff participated in the staff focus groups, and 90 service recipients participated in the service recipient focus groups[7].

Table 33. Number of Staff and Service Recipient Interview/Focus Group Participants, by Site

Site	Number of Program Staff	Number of Service Recipients
ACR Health	2	5
Bridging Access to Care	4	5
Champlain Valley Family Center	6	10
East 99th Street	5	7
Norwood Terrace	6	12
CAMBA Gardens	5	11
Opportunities for Broome	3	9
Evergreen Health Services	2	5
Living Opportunities of DePaul	3	5
BronxWorks	4	4
Unity House of Troy	2	1
Saint Joseph's Medical Center	2	--
Lexington Center	5	5
Olmstead Housing Subsidy	2	3
Federation of Organizations	10	7
Rebuilding Together Saratoga County	--	1
Ithaca Housing Authority	4	--
Total	**65**	**90**

Data Analysis

Focus group and interview notes were reviewed by the research team. Audio tapes were partially transcribed for the analysis. Three researchers from the team coded the data, including coding several transcripts together to ensure consistency.

Analytic matrices were developed for each provider site, consistent with Miles, Huberman, and Saldana's approach, which explicates processes of data reduction, data display, and conclusion drawing (2013). Summary matrices were used to synthesize data collected from the program manager interviews, staff focus groups, and service recipient focus groups relevant to issues of access. Then a cross-program matrix was developed to assess emergent themes, as well as areas of consistency and divergence across sites. Using this approach, data were triangulated across both provider sites and stakeholder groups (Stake, 1995). Emergent themes were then developed inductively from the data, drawing from the constant comparative method (Charmaz, 2006).

[6] In several provider sites, only two or three staff are employed within the MRT-SH funded program components. In such cases, group interviews (interviews with both or all staff together) were conducted rather than focus groups.

[7] Within two provider sites, Unity House and Rebuilding Together Saratoga, interviews were conducted with a single participant, rather than a focus group.

RESULTS

This section summarizes MRT-SH provider perspectives on targeting practices. Specifically, the perspectives of administrators and staff regarding who they perceive to be benefiting most from supportive housing are described. Provider perspectives regarding those who have been challenging to serve, including common barriers to serving participants most effectively are then detailed.

Who is Benefiting Most from Supportive Housing?

Administrative and Staff Perspectives. Overall, most program administrators and staff could not pinpoint a subgroup of individuals who seem to be benefiting most from supportive housing. Many reported that success is based on matching the individual to the specific supports that he or she requires, in addition to having a dedicated team to ensure effective service delivery. For instance, staff from Chautaqua County ARC reported:

> *"I think there's people that we've supported through this MRT that nobody thought would be successful and they're doing fine three years later; they're still living on their own, doing very, very well with supports in place. And people often, I think, are surprised by some of it. So it's hard to say what type of person because…the potential is there for anybody to do it, there's not really like a type that we would identify. It's the support that we can surround them with, and the staff that they choose to hire, and the teams that they have working with them that's gonna make it successful."*

Another common response was that participants who are most motivated and engaged are benefiting most from supportive housing. For instance, staff from Bridging Access to Care reported that for motivated participants, housing made the difference:

> *"We've had clients where there's a positive outcome, where they'll get jobs, get connection back with their family, gone back to school. And we have clients who are trying to do more with their life, all they needed was that little break, which was the housing."*

Similarly staff from Chautaqua County ARC further underscored how engaged participants who are motivated to live independently flourish most the program:

> *"One of the common things is that they all wanted to live on their own. They all wanted change in their life, they all wanted to do it….they have to have that personal drive, otherwise it's not going to come together."*

Staff from CAMBA Gardens described how motivated participants learn about the services offered by the program, and hence benefit most:

> *"I think I have a client who is benefiting a lot. I think because she understands exactly what we provide, she utilizes everything that she can. She fully understands why we're here, what we're here to do, and just how much she can use social services."*

Administrators and staff from some of the programs indicated that those who benefit most are the participants with the greatest needs. For instance, a program administrator from the Federation of Organizations indicated:

> *"….people that have benefited the most, are the ones that aren't really good self-advocates because we check on them twice, three times, seven times a week sometimes. And if they're not outspoken, or have dementia, or are shy just in general, we're there to make sure that they have all their needs met."*

Similarly, staff from Opportunities for Broome noted:

> *"I would say the people who benefit the most who are the most need… I think they benefit the most because their situations were so dire when they came in. Establishing the stable housing and providing the case management, they have been able to achieve the most."*

Several provider-specific perspectives emerged regarding who is benefiting most. For instance, administrators and staff from ACR Health, as well as staff from Ithaca Housing Authority noted that those who are very ill are benefiting most; these participants benefit from having stable housing to return to after being discharged from the hospital. Living Opportunities of DePaul staff found that single males with substance use issues functioned best in their Housing First program. CAMBA Gardens staff indicated that participants with cognitive or developmental disabilities are doing particularly well, as they are receptive to assistance. East 99th Street administrators indicated that those coming from skilled nursing facilities were benefiting most. As one administrator noted:

> *"The people from the skilled nursing facilities have done remarkably well and I think that was the population that people were most concerned by just in terms of that transition period and making sure that they were acclimated to living independently."*

Champlain Valley staff indicated that mothers with addictions are benefiting most from the program, as they are regaining custody of their children:

> *"For those women who have lost custody, I think we have seen some really, really good outcomes in terms of these women returning to work, in terms of these women reunifying with their children, cleaning up legal obligations, fulfilling drug court requirements which can be very stringent."*

Evergreen Health Services staff indicated that participants with few social supports outside of the program benefit most:

> *"The clients that seem to benefit the most are the ones who have no other social supports around them. So if their family has kind of stopped talking to them for either their HIV status or their drug use, behavior issues, they have no one else to go to and we are the only ones that have been willing to help them."*

Who is Most Challenging to Serve in Supportive Housing?

Administrative and Staff Perspectives. Administrators and staff provided several common responses when asked to describe subgroups of participants who are most challenging to serve in supportive housing. The majority of providers indicated that those benefiting least are participants who are unwilling to engage in services. The providers tended to perceive these participants as less trusting or less motivated, in many cases. Staff from Living Opportunities of DePaul and Evergreen Health Services described how a lack of engagement is a barrier to program effectiveness:

> *"When they're not engaging in the supportive services. They're not engaging in treatment, they're not engaging in substance [use services], they're not engaging in what's out there for them and then that makes it tricky… You put the supports in place and I think people get out of them what they put into them. And it makes working with this program a little more difficult when those pieces aren't in place."*

> *"It's mostly a mentality. So if… they don't trust us when we start or they're not willing to engage, those are the ones that don't benefit too much from it and they eventually get discharged, usually on their lack of engagement."*

Several providers reported that participants who do not communicate with staff are challenging to serve effectively. As staff member from CAMBA Gardens described:

> *"I also have a client who doesn't understand. He just looks at it as we're just being intrusive, so he is not benefiting from it at all. He doesn't really see the benefits of independent living and supportive housing."*

Similarly, a staff member from Broome described how a lack of communication creates barriers to effective problem resolution:

> *"Communication is the key to our program, whether you are doing well or bad. So people who tend to fall into a bad situation and no one is notified… lack of communication is the biggest determination for doing less well. Particularly, if we know about a situation, we can refer to services and rectify the issue."*

Another common perspective from the providers is that participants with the most severe mental health issues, substance abuse issues, and chronic conditions are challenging to serve, particularly when participants experience co-morbidities. Staff from CAMBA Garden, for instance, indicated that participants with serious mental illness who are not medication compliant are challenging to serve. Participants with serious mental illness often struggle to trust staff, as a staff member from Evergreen Health Services described:

> *"Ones who could benefit a lot more but are difficult are the clients with severe mental illness. Because even trying to meet with them, their mental health can be a barrier to that. I had a client that would – I'd say, "Okay, I need to meet with you." And then we'd set up a time and I'd get there and he would shut his door, be in his room, wouldn't even answer the door when I got there. And he was paranoid that I was going to take his housing away from him, I think because the one time he wasn't cooking for himself. So he thought I was going to evict him from his apartment and get him off the program, which is not something we would do in a million years."*

Similarly, staff from the Federation of Organizations described how participants with serious mental health issues may be more challenging to serve:

> *"I find that some patients who do have comorbid psychiatric illness are less likely to be as successful because of their depression or their just overall psychiatric illness – either with their medication effects, their medical well-being, their compliance, their willingness to trust us, their willingness to be compliant with medicine."*

Staff from Champlain Valley and Ithaca Housing Authority indicated that co-morbid conditions challenge the staff's ability to support participants. As a staff member from Champlain Valley indicated:

> *"I think with some of the clients that have major medical, major mental health, and a severe substance use disorder, that they're more difficult to work with. That's real challenging; that's doing probably triple the amount of networking. That's a labor intensive population, and it should be."*

Staff from Norwood Terrace and Olmstead Housing Subsidy indicated that participants who are actively using substances are most challenging to serve. As a staff member from Norwood described:

> *"I've noticed that people that are actively using substances aren't ready to be part of – I don't know – they're not interested in engaging in their medical or psychiatric health. I think one of the biggest barriers is the treatment of substance use."*

Though less consistently reported, some providers described specific concerns that challenge their ability to serve the participants. For instance, staff from Bridging Access to Care noted that participants who are illiterate are challenging to

serve, and also described how cultural issues can present challenges to effective engagement. Administrators from East 99th Street noted that participants who fall behind in rent become challenging to serve. Finally, staff from ACR Health indicated that participants who are ready to transition and no longer require intensive support services benefit least.

Key Findings

- Findings from the qualitative analysis highlight participant characteristics that providers associate with success in supportive housing. Most providers indicated that there is no one "profile" of individuals who succeed in housing; rather, they noted that it is critical for the supports provided to match the needs of the individual participant, viewing this as essential to success. However, the providers also commonly reported that participants who are most motivated or engaged tend to do best in the program.
- The providers reported that participants who are less motivated or willing to engage in services are the most challenging to serve, and seem to be benefiting the least. Several providers described serious mental illness, active substance abuse, and co-morbid conditions as characteristics that create challenges to effective delivery of supportive housing.

Conclusions

PART I: SALIENCE AND OVERLAP AND REDUNDANCY OF PRIORITIZATION CRITERIA

- None of these prioritization criteria are a good substitute for any other single criterion, either among clients in the MRT-SH program or in the Medicaid population at large. However, nearly all of the clients who meet the inpatient criteria are captured by at least one other criteria, so that the inclusion of inpatient utilization as a prioritization criteria adds relatively few clients
- People who qualify only because of their health home enrollment are not high-cost or high-utilizing clients. If high-cost, high-utilizing clients are the target group for MRT-SH, this criterion is not effective in capturing them.
- A failure to include clients who only meet the ED criterion under the prioritization menu will bias MRT-SH clients to be more male, more non-Hispanic white, and older. Those captured under the ED criterion only appear to represent a distinct group of high utilizers who meet the definition of a high utilizer but have a different demographic profile from those meeting other criteria and who would not otherwise be captured by the MRT-SH programs.
- Dropping both the health home and inpatient criteria and basing the prioritization menu only on costs and ED visits would not dramatically change the character of the clients currently being served by MRT-SH. This simplified prioritization menu would be a more streamlined way to capture largely the same type of clients, while at the same time trimming out some of those who are less intensive users of resources.
- Using a criteria based on top 20% of spending in the specific population or five or more ED visits would result in substantially smaller percentages eligible for services, but would also result in more acute populations, with higher rates of comorbidities, more inpatient and ED use, and more pre-period spending.
- None of the prioritization criteria analyzed, when applied to the random sample, would produce a sample of potential clients that is comparable to actual MRT-SH clients in average level of costs. This would seem to suggest that programs are either targeting their services to a higher-cost population than the top 20%, or are using other – perhaps more subjective – indicators of need that are correlated in practice with higher spending.

PART II: VARIATION IN COST SAVINGS BASED ON PRIORITIZATION CRITERIA

- Many of the items that are part of the current prioritization menu are not significantly associated with more favorable outcomes within any of the diagnostic subgroups or for clients with pre-period shelter stays. Having ED visits or inpatient stays in the pre-period was not associated with a greater decrease in pre-post spending for any group. Nor was health home enrollment. Having a pre-period nursing home stay was associated with a significantly greater decrease in pre-post spending only among clients with an SMI.
- Pre-period costs were significantly associated with decreases in pre-post spending in all groups. The greater decrease in pre-post spending associated with higher pre-period spending for those who received the treatment implies that high-spending clients will benefit more from receiving the program, and that by enrolling more high-spending clients, the program can maximize cost savings.
- Certain client characteristics are associated with greater cost savings for the Treatment group relative to the Comparison group within different client populations.
    - » Pre-period spending is more strongly associated with pre-post cost decreases for the Treatment than for the Comparison group among those with an SMI or an SUD, or among shelter users. In contrast, among clients with HIV or chronic medical conditions, higher pre-period spending is more strongly associated with pre-post cost decreases among the Comparison group relative to the Treatment group.
    - » Being in a health home is associated with a pre-post increase in spending for clients with an SMI, but this increase is smaller for those in the Treatment group. Among those with an SUD, with HIV, with another chronic medical condition, or with shelter stays, being in a Health Home is associated with a pre-post spending

increase for Comparison group clients, but not for Treatment clients. (Treatment clients with HIV or pre-period shelter stays actually have a substantial decrease in spending associated with health home enrollment.)

  - » Finally, nursing home stays are associated with pre-post spending *increases* for Comparison clients in all groups, but are associated with pre-post spending *decreases* for Treatment clients in all groups except HIV (where none of the Treatment clients had pre-period nursing home use).

- In sum, for all subgroups of clients, except those with HIV, the largest cost savings in raw dollars between the Treatment versus the Comparison group would be realized by using the most restrictive prioritization criteria (i.e., clients who are either in the top 20% of population-specific costs or have 5 or more ED visits).
  - » However, these clients also have the highest pre-period spending, as evident in Part I of the report. Thus, they would also be expected to experience greater regression to the mean than clients selected by less restrictive criteria. This is why it is also useful to look at the Treatment cost savings proportionate to the Comparison cost savings as a measure of effect size.
  - » Using this metric, the larger *proportional* effect often results from less restrictive criteria. To understand the relative effectiveness of the program under different criteria, the proportional measure is probably better. From a policy perspective, however, it may be more desirable to maximize cost savings in raw dollars.

PART III: STAKEHOLDER FEEDBACK

- Findings from the qualitative analysis highlight participant characteristics that providers associate with success in supportive housing. Most providers indicated that there is no one "profile" of individuals who succeed in housing; rather, they noted that it is critical for the supports provided to match the needs of the individual participant, viewing this as essential to success. However, the providers also commonly reported that participants who are most motivated or engaged tend to do best in the program.
- The providers reported that participants who are less motivated or willing to engage in services are the most challenging to serve, and seem to be benefiting the least. Several providers described serious mental illness, active substance abuse, and co-morbid conditions as characteristics that create challenges to effective delivery of supportive housing.

Policy Recommendations

The implications of these findings for policy depend in large part upon the program priorities. Rather than indicating a clear policy direction, the results of this report suggest some policy questions for further consideration:

1. The program leadership should consider the desired balance between exclusivity and inclusivity.

   It seems to be clear that more restrictive prioritization criteria – a higher bar, so to speak – will result in a substantially smaller percentage of the Medicaid population with program-specific diagnoses being prioritized for services. However, the clients who *are* prioritized under the strictest criteria (that involving population-specific cost cutoffs), will be more intensive resource users than those prioritized under more inclusive criteria.

   In particular, the more restrictive criteria will result in a higher-spending profile of clients, and these clients tend to experience the greatest cost savings in raw dollars compared to a Comparison group with the same spending profile.

2. Health home enrollment is one of the current prioritization criteria that could be considered for elimination. Most health home enrollees are captured by other criteria, and those who are not captured by other criteria tend to have comparatively low rates of resource use and comorbidities.

   Home health enrollment is also not associated with significantly pre-post cost savings among MRT-SH clients, but when the Treatment clients are compared to the Comparison clients it is observed that Comparison clients in health homes experience substantial increases in pre-post spending whereas Treatment clients in health homes do not experience increases.

3. Inpatient use is another current prioritization criteria that could be considered for elimination. Nearly all of the clients who would be prioritized based on inpatient use are captured by other criteria. Although these clients are high resource users, the additional administrative burden on programs of documenting pre-period inpatient stays to determine enrollment priority may not be worth the very few additional clients who would be identified by this measure alone.

4. The effects of using a population-specific cost cutoff are clear – such a criterion results in a smaller population of more resource-intensive clients. However, the analyses contained in this report treat each of the four diagnostic groups (overall and in conjunction with previous shelter use) as discrete populations when in practice there is tremendous overlap. Implementation of such a population-specific cost criterion requires consideration of how to treat that majority of cases where clients belong to more than one diagnostic population. One possibility is to use the lowest of the relevant population-specific cutoffs (to be more inclusive); another possibility is to use the highest applicable cutoff (to be more exclusive). Programs targeted to a specific population (e.g., the OMH, OASAS, or AIDS Institute programs) may choose to use the cost cutoff for that population regardless of whether a patient has co-occurring diagnoses.

   A related issue applies to the minority of clients who have none of these four types of diagnoses. While this is less than 10% of MRT-SH clients overall, some programs (such as the OPWDD program) have higher percentages.

5. The patterns for the HIV-positive population are substantially different than those for other diagnostic populations, and seem to imply that MRT-SH enrollment results in higher rather than lower levels of spending for these clients. Because the recommended therapies for HIV/AIDS are cost-intensive, this may represent a more appropriate level of service utilization for their condition rather than increased morbidity or unnecessary use of services. Any policy decisions related to targeting at the level of all MRT-SH programs should acknowledge the uniqueness of the HIV population and the AIDS Institute programs.

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Supportive Housing Evaluation

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