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Medicaid Redesign Team
Supportive Housing Evaluation

Outcomes Report 2

Volume 1: Pre-Post Analysis

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Executive Summary

INTRODUCTION

This report details current changes in health-related outcomes among clients of programs sponsored by the New York State Medicaid Redesign Team's Supportive Housing initiative (MRT-SH), including a summary of these projects and the Medicaid cost characteristics of the people enrolled. MRT-SH initiatives to date include 53 capital projects, 25 of which have opened; 18 rental subsidy and supportive services programs and pilots; and one accessibility modification program.

For each included MRT-SH program, Medicaid utilization and other outcomes data are presented from one year before participants' enrollment through September 2017. The goal of the analysis is to provide an updated description of the well-being of clients before and after program enrollment.

INCLUSION CRITERIA AND METHODOLOGY

All analyses presented below are for the 23 programs that began enrolling participants prior to October 2016. Participants were included for analysis provided that they were enrolled prior to October 2016, and provided that, for the period spanning from one year prior to program enrollment to one year after enrollment, they had full, continuous Medicaid coverage.[1] Of the 6,187 clients enrolled by October 2016, 3,649 met these criteria for full continuous Medicaid coverage.

Medicaid claims for clients meeting these criteria were then analyzed over the twelve months prior to and twelve months after program enrollment. A second post-enrollment year was also analyzed for programs where a sufficient number of clients also met full-coverage criteria for the additional year. Participants were included in the analysis according to an intent-to-treat methodology, such that participants were kept for pre-post analysis of outcomes whether or not they remained enrolled in supportive housing for the post-period. Significance testing is done with nonparametric techniques, specifically the Wilcoxon test for count variables and the McNemar test for dichotomous variables. For programs that began enrolling participants prior to October 2016 but did not have at least 25 eligible participants, descriptive statistics are presented, but inferential statistics (i.e., significance tests) were not performed.

KEY FINDINGS

- The MRT-SH programs are serving a seriously ill population who experience high rates of comorbidities. Sixty percent have an active diagnosis of a Serious Mental Illness (SMI), 41% have a Substance Use Disorder (SUD), 24% are HIV+, and 52% have one or more other chronic conditions, not including HIV. In terms of chronic conditions, hypertension and diabetes are the most commonly experienced illnesses. A substantial number of participants have asthma, coronary heart disease, osteoarthritis, or COPD.
- MRT-SH participants had high rates of inpatient and emergency department utilization in the pre-period, prior to enrollment in supportive housing. Across the various programs, 42% percent had at least one inpatient admission and 61% had at least one emergency department visit in the pre-period. The mean number of inpatient days was 9.8, and the mean number of emergency department visits was 3.0.
- Following enrollment in supportive housing, participants across the MRT-SH programs used virtually all of the measured services significantly less. The findings show statistically significant decreases in inpatient care, inpatient mental health services, inpatient substance abuse services, average inpatient days, and emergency department visits (including those for mental health and substance abuse, and particularly visits that were potentially preventable).
- In the geographic areas from which data were available on homeless shelter stays, shelter use decreased from 25% of clients in the pre-period to 3% in the year following MRT-SH enrollment. This decrease was largely maintained through the second year following MRT-SH enrollment, even though many clients were discharged from MRT-SH before or during this period.

[1] Full, continuous Medicaid coverage was defined as meeting both the following criteria: (1) no coverage under a Medicaid coverage type considered less than full coverage; and (2) no period of 60 days or longer without full Medicaid coverage.

- The extent of changes in service utilization from the pre-period to the post-period differed across the programs. OASAS Rental Subsidies, OMH Rental Subsidies Statewide, the AIDS Institute "services only" program, and OTDA Homeless Housing Assistance Program showed particular promise in terms of reducing inpatient days and/or emergency department visits.

AIDS Institute (AI) programs

Clients in the AIDS Institute – Services Only program experienced significant reductions in:

- Average number of inpatient days, percent with any ED visits, and average number of ED visits
- Percent with any Inpatient stays for HIV
- ED visits for routine and non-emergent conditions
- Shelter use

Clients in the AIDS Institute – Services and Subsidies program experienced significant decreases in shelter use. Clients in the AIDS Institute – Pilot Program experienced reductions in the likelihood of inpatient care and ED care, but the sample size was too small for significance testing.

Housing and Community Renewal (HCR) programs

- Clients in the East 99th capital project experienced significant reductions in ED visits for emergent but PC treatable conditions and in shelter use
- Clients in the HCR behavioral health projects overall experienced significant reductions in:
  - The average number of ED visits overall
  - The likelihood of ED visits for SUD
  - ED visits for routine complaints, non-emergent conditions, avoidable conditions, injuries, and drug- and alcohol-related conditions.
  - Shelter use
- Clients in the Boston Road capital project experienced a decrease in the average number of ED visits for injuries
- Clients in the Third Avenue capital project experienced a decrease in the average number of ED visits overall, and ED visits for routine conditions
- Clients in the Norwood Terrace capital project experienced a decrease in the percent with any inpatient care and the average number of inpatient days

Office of Temporary and Disability Services (OTDA) programs

Clients in EPVA experienced:

- A reduction in the percentage with at least one ED visit
- A reduction in ED visits for routine and non-emergent conditions
- A reduction in shelter use

Clients in the HHAP capital projects experienced:

- A reduction in the percent with any inpatient and ED use and in the average number of inpatient days and ED visits overall
- A reduction in ED visits for routine complaints and emergent but PC treatable conditions

Clients in the Homeless Senior and Disabled Placement Pilot experienced:

- A reduction in the percent with any ED use, but only in the second year post-enrollment
- A reduction in ED visits for routine complaints
- A reduction in shelter use

Office for Mental Health (OMH) programs

Clients in RSB experienced:

- A reduction in the average number of inpatient days and ED visits overall
- A reduction in ED visits for emergent but PC treatable conditions
- A reduction in shelter use

Clients in RSS experienced:

- A reduction in the percent with any inpatient or ED and in the average number of inpatient days and ED visits (the latter only statistically significant among those with at least two years of post-enrollment data)
- A reduction in the percent with any inpatient use and any ED use for SMI
- A reduction in the percent with any inpatient care for SUD
- A reduction in ED visits for routine complaints and non-emergent conditions, and for psychiatric-related visits and injuries
- A reduction in shelter use

Office of Addiction Services and Supports (OASAS) program

Clients in OASAS experienced:

- A decrease in the percent with any inpatient use or ED use and the average number of inpatient days and ED visits
- A reduction in ED visits for routine complaints, and nearly all types of potentially avoidable ED visits (except injury)
- A reduction in the percent with any inpatient or ED use for SMI
- A reduction in the percent with any inpatient or ED use for SUD
- A reduction in shelter use

Office for People with Developmental Disabilities (OPWDD) program

Clients in OPWDD experienced:

- A reduction the average number of ED visits, but only in the second year following MRT-SH enrollment
- An increase in non-emergent ED visits and ED visits for injuries

Department of Health – Office of Health Insurance Programs (OHIP) programs

Clients in HHSP experienced:

- A reduction in the percent with any ED and inpatient use overall and in the average number of inpatient days and ED visits
- A reduction in the percent with any inpatient and ED use for SMI
- A reduction in the percent with any inpatient care for SUD overall
- A reduction in ED visits for routine complaints, non-emergent conditions, and injuries, as well as for alcohol-related, drug-related, or psychiatric-related ED visits
- A reduction in shelter use

Clients in the NHIL transition program experienced:

- A reduction in the percentage with at least one inpatient stay

Clients in the SSHP program experienced:

- An increase in the percent with any inpatient use and the average number of inpatient days
- Decreased shelter use in the first year post-enrollment

CONCLUSION

The Medicaid service utilization findings to date are encouraging. MRT-SH program participants appear to be benefiting from supportive housing, as evidenced by decreases in the receipt of high-cost Medicaid services. The OASAS Rental Subsidies program and the OMH Rental Subsidies Statewide program showed especially strong findings in the current study, with statistically significant decreases in inpatient stays, emergency department visits, and other high cost services. Additional research is needed to better understand which program participants benefit most from supportive housing.

Introduction

This report examines changes in some of the clinical and other outcomes for enrollees in the programs sponsored by the New York State Medicaid Redesign Team's Supportive Housing initiative (MRT-SH). The report focuses on clients' health care utilization over the 12 months prior to and after program enrollment, as well as program attrition, quality of life, and housing stability. Utilization of inpatient and emergency services are also analyzed for the second year post-enrollment when sample size permits.

GOALS OF THE MEDICAID REDESIGN TEAM SUPPORTIVE HOUSING (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.[2] Research also indicates that 5% of consumers are responsible for 50% of health care costs.[3] 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[4]. 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.

SUPPORTIVE HOUSING AND HOMELESSNESS

Research indicates an association between housing instability, high utilization of acute hospital services, poor health outcomes, and high costs of care[5]. Homeless individuals use emergency departments and require inpatient hospitalization at rates three to four times higher than other citizens[6,7,8]. At the same time, rates of primary care use are low among homeless populations[9,10]. Permanent Supportive Housing has been credited with reducing homelessness, particularly among those with complex needs[11,12,13,14], and two studies of supportive housing using a Housing First approach show improvements in housing stability[15,16].

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[2] Bradley EH, Elkins BR, Herrin J, Elbel B. 2011.
[3] Stanton MW, Rutherford MK. 2005.
[4] Doran KM, Misa EJ, Shah NR. 201.
[5] Wright et al, 2016.
[6] Chambers et al, 2013.
[7] Kushel et al., 2001.
[8] Kushel et al, 2002.
[9] Chambers et al., 2013.
[10] Hwang, 2001.
[11] HUD, 2010.
[12] Culhane et al., 2002.
[13] Metraux et al., 2003.
[14] Stefanic & Tsemberis, 2007.
[15] Palepu et al., 2013.
[16] Stergiopoulos et al., 2015

OUTCOMES ASSOCIATED WITH SUPPORTIVE HOUSING

Previous studies of supportive housing outcomes have focused on housing stability, health care utilization, shelter use, and incarceration rates. Health care utilization outcomes have been tracked through Medicaid data in most studies, with specific focus on emergency department visits, hospitalizations, hospital days, outpatient behavioral health, and primary care visits[17,18,19,20]. Studies have also focused on overall system use beyond Medicaid, tracking outcomes such as shelter stays, sobering center use, and jail/prison incarceration[21,22,23,24].

Emerging research has shown reductions in costs associated with health care utilization among formerly homeless individuals residing in supportive housing, guided by a Housing First model (in which residents are not required to achieve or maintain sobriety)[25,26,27,28,29]. Cost savings related to supportive housing are due to reductions in acute or "crisis-centered" services, such as emergency department use and inpatient hospitalization. These cost reductions offset increases in "community-based" services, such as primary care visits, and are also reflected through reduced use of psychiatric inpatient services and reductions in incarcerations[30].

Other studies show reductions in criminal justice involvement[31,32], and reductions in substance use[33]. Following placement in permanent supportive housing, participants spend fewer days homeless and/or in criminal justice settings[34].

[17] Sadowski et al., 2009
[18] Wright et al, 2016
[19] Metraux et al., 2003
[20] Culhane et al., 2002
[21] Srebnik et al., 2013.
[22] Goering et al, 2015.
[23] Culhane et al., 2002.
[24] Metraux et al., 2003.
[25] Ibid.
[26] Srebnik et al., 2013.
[27] Wright et al., 2016
[28] Sadowski et al., 2009
[29] Goering et al., 2015
[30] Ibid.
[31] Larimer et al., 2009.
[32] Srebnik et al., 2013
[33] Padgett et al., 2011.
[34] Henwood et al., 2014.

Methodology

Analyses of Medicaid claims include all clients who were enrolled in supportive housing at least one year prior to September 30, 2017 and had continuous Medicaid coverage[35] during the year before and after their supportive housing start (n=3,649).

THE PROJECTS

MRT-SH initiatives to date[36] include 53 capital projects, 25 of which have opened; 18 rental subsidy and supportive services programs and pilots; and one accessibility modification project. Table 1 below shows the programs that are included in the outcomes study in the body of this report, and Table 2 shows those programs that were excluded from the report, primarily because they were too new to have accumulated sufficient data. Supportive housing enrollment data for each MRT supportive housing participant included in this analysis is based on program records[37]. Medicaid claims for these clients were pulled from the Medicaid Data Warehouse (MDW) for dates of service through 9/27/2017.[38]

ANALYSIS INCLUSION CRITERIA

All analyses presented below are for those programs that began enrolling participants prior to October 2016 and had a sufficient number of eligible participants (25 or more). Participants were included for analysis provided that they were enrolled prior to October 2016, and provided that, for the period spanning from one year prior to program enrollment to one year after enrollment, they met both of the following **full Medicaid coverage criteria**:

1. No coverage under a Medicaid coverage type that was considered less than full coverage; and
2. No period of 60 days or longer without full Medicaid coverage.

Of the 6,187 clients enrolled by October 2016, 3,649 met these criteria for full continuous Medicaid coverage.

Health care utilization, program attrition, quality of life, and housing stability for clients meeting these criteria was then analyzed over the twelve months prior to and twelve months after program enrollment. A second post-enrollment year was also analyzed for programs where a sufficient number of clients (10 or more) also met full-coverage criteria for the period 13 months to 24 months after enrollment. Participants were included in the analysis according to an intent-to-treat methodology, such that participants were kept for pre-post cost analysis whether or not they remained enrolled in supportive housing for the post-period.

For programs that began enrolling participants prior to October 2016 but did not have at least 25 eligible participants, descriptive statistics are presented, but inferential statistics (i.e., significance tests) are not performed.

[35] Continuous Medicaid coverage was defined as having gaps in full Medicaid coverage not exceeding sixty consecutive days in either the pre- or the post-enrollment period.

[36] As of 5/11/18

[37] 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, NHIL, and Senior Supportive Housing Pilot through 10/2017, Access to Home Expansion program through 11/2017.

[38] Data was extracted on 3/27/2017, Medicaid claim cycle 2123.

Table 1. Summary of MRT-SH Projects Included in Outcomes Analyses, w/ Enrollees to Date.

Program	Earliest Enrollment Date	Projects	People Served, to date	# included in Pre / Post Year 1 Post Analysis[39]	# included in Pre / Post Year 2 Post Analysis[40]	# with 1+ month in Medicaid Managed Care (Pre / Post Year 1)	# with 1+ month in Health Home (Pre / Post Year 1)
All Programs[41]		144	6,187	3,649	2,478	2,573/2,673	2,015/2,209
Department of Health AIDS Institute (AI)							
AIDS Institute Services Only†	Jul 2012	11	881	624	529	597/632	576/604
AIDS Institute Services+Subsidies	Oct 2012	13	439	149	84	300/267	282/197
AIDS Institute Pilot†	Dec 2014	1	35	17	11	30/35	35/34
Housing and Community Renewal (HCR): Capital							
East 99th Street	Nov 2014	1	192	150	130	105/128	47/53
3361 Third Ave	Sep 2015	1	38	34	5	32/30	28/27
Boston Road	Jan 2016	1	97	76	0	83/83	37/45
Norwood Terrace	Aug 2016	1	59	29	0	43/46	38/33
VOA Creston Ave	Dec 2014	1	22	19	18	22/22	6/4
Access to Home	Feb 2016	10	94	21	0	44/33	7/1
Office of Temporary and Disability Assistance (HHAP Capital)							
All HHAP Capital Projects	Dec 2013 – Aug 2016	5	145	86	49	101/112	51/51
Office of Temporary and Disability Assistance (Other)							
Eviction Prevention for Vulnerable Adults	Aug 2013	1	283	213	188	197/193	42/37
Homeless Senior and Disabled Placement Program	May 2014	1	234	199	65	157/161	150/100
Office of Mental Health (OMH)							
OMH Rental Subsidies - Brooklyn	Feb 2013	8	472	336	292	318/315	297/352
OMH Rental Subsidies - Statewide	January 2013	38	768	467	362	492/497	479/507
Office of Alcohol and Substance Abuse Services (OASAS)							
OASAS Rental Subsidies	April 2013	18	690	441	313	561/585	294/375
Office for Persons With Developmental Disabilities (OPWDD)							
OPWDD Rental Subsidies	May 2013	11	72	59	49	0/4	0/0
DOH – OHIP							
Health Homes SH Program	Dec 2014	11	566	319	149	424/437	402/379
Nursing Home to Independent Living (Transitions)	Jan 2015	2	347	33	4	19/30	6/4
Senior SH Services†	Dec 2014	9	634	377	230	178/240	44/51

[39] Full cohort, pre-enrollment year versus first year post-enrollment

[40] Subgroup, pre-enrollment year versus second year post-enrollment, for those participants a second year of post-enrollment data available

[41] † = Program has ended

Table 2. Summary of MRT-SH Projects not Included in Outcomes Analysis, with Enrollees to Date.

Program[42]	Earliest Enrollment Date	Number of Projects	Number of People Served, to date
All Programs		**131**	**6,877**
HCR: Capital			
VOA Cobblestone	November 2016	1	41
CAMBA Gardens II	December 2016	1	108
Alexander Street Apartments	February 2017	1	14
The Modern (Community Housing Innovations)	April 2017	1	21
Concern Middle Island	July 2017	1	43
OTDA (Other)			
New York State Supportive Housing Program (NYSSHP)	January 2013	28	4,112
OMH			
Step-Down/Crisis Residence Capital Conversion Project	March 2015	9	502
OMH Supported Housing Services Supplement Program†	December 2013	68	903
DOH – OHIP			
Nursing Home Transition and Diversion	January 2009	9	894
Olmstead Housing Subsidy Program	December 2016	1	110
Special-Needs Assisted Living Program A/B	March 2018	11	129

Nonparametric tests of statistical significance are typically used throughout the report because of the non-normal distribution of most of the dependent variables– the McNemar test for pre-post differences in dichotomous variables, and the Wilcoxon test for pre-post differences in continuous variables.

P-values are not calculated for subgroups of fewer than 25 people. Data are suppressed for subgroups of fewer than 10 people.

Part I of the report will provide an overview of pre-enrollment and post-enrollment health care use for the MRT-SH programs overall, while the remaining agency-specific sections provide program-level detail.

[42] † = Program has ended

All MRT-SH Clients

OVERALL UTILIZATION OF INPATIENT AND EMERGENCY SERVICES

The MRT-SH participants have high rates of inpatient and emergency department utilization. In the 12 months prior to MRT-SH enrollment, 42% had at least one inpatient admission, and more than half (61%) had at least one emergency department visit. These patients averaged, in the year prior to their MRT-SH enrollment, 9.8 inpatient days and 3.0 emergency department visits. All of these services, however, were used significantly less following MRT-SH enrollment, regardless of whether they were measured by any use of the services or by volume of use.

When only those clients with continuous Medicaid coverage for two years post-enrollment are analyzed, the pre-period and one-year (Y1) post-period numbers differ little from the full sample. The Y1 post-period numbers are all significantly lower than the pre-period numbers. Furthermore, the numbers for the twelve to 24 month (Y2) post-period are extremely similar to those from the Y1 post-period. This pattern implies that program effects continue with very little change through the second year after enrollment.

Table 3. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment.

				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=3,649)	42%	36%	--	***	--	--
Two year post-enrollment sample (n=2,478)	42%	36%	34%	***	***	n.s.
Average number inpatient days						
Full sample (n=3,649)	9.8	6.1	--	***	--	--
Two year post-enrollment sample (n=2,478)	9.5	6.0	6.2	***	***	n.s.
Emergency department utilization						
Any ED visits						
Full sample (n=3,649)	61%	55%	--	***	--	--
Two year post-enrollment sample (n=2,478)	61%	55%	54%	***	***	n.s.
Average number of ED visits						
Full sample (n=3,649)	3.0	2.3	--	***	--	
Two year post-enrollment sample (n=2,478)	2.9	2.3	2.3	***	***	n.s.

*** p =<0.001, n.s. = not statistically significant

By demographics

MRT-SH clients were 54% men and 46% women. Both men and women experienced statistically significant decreases in the average volume of inpatient and ED services used. Men had a higher baseline for inpatient days than women (11.4 versus 8.0 days), but experienced a somewhat larger decrease after MRT-SH enrollment. Men and women both started with similar rates of ED use, but men experienced a larger decrease in the post-period[43].

[43] Please note, however, that the gender balance varies by program, so that program impact may confound gender effects.

Table 4. Average Inpatient Days and Emergency Visits by Gender, Pre- and Post-Enrollment

	Inpatient Days Pre	Inpatient Days Post	% Change	Sig.	ED Visits Pre	ED Visits Post	% Change	Sig.
Male (n=1,959)	11.3	6.7	-41%	***	3.0	2.1	-30%	***
Female (n=1,689)	8.0	5.3	-34%	***	3.1	2.4	-23%	***

*** p =<0.001, n.s. = not statistically significant

Twenty-four percent of the MRT-SH clients were under the age of 40, 52% were ages 40 to 59, and 24% were age 60 or older. This client population is unusual in that the oldest clients used inpatient and ED care at the lowest rates, likely because the programs which were focused on older adults generally had lower rates of serious behavioral health diagnoses than the other programs, and behavioral health crises are major drivers of inpatient and ED use. Younger and middle-aged adults experienced significant decreases in their use of services, while older adults did not show statistically significant changes.

Table 5. Average Inpatient Days and Emergency Visits by Age, Pre- and Post-Enrollment

	Inpatient Days Pre	Inpatient Days Post	% Change	Sig.	ED Visits Pre	ED Visits Post	% Change	Sig.
Young Adult (<40) (n=1,376)	13.8	6.6	-52%	***	3.5	2.7	-23%	***
Middle Adult (n=1,912)	10.4	6.7	-36%	***	3.5	2.6	-26%	***
Older Adult (60+) (n=361)	4.2	4.1	-2%	n.s.	1.4	1.2	-14%	n.s.

*** p =<0.001, n.s. = not statistically significant

The MRT-SH client population was 33% White, non-Hispanic; 39% Black, non-Hispanic; 22% Hispanic of any race; and 6% multiracial or other race. White, non-Hispanic clients had the highest average inpatient days and ED visits in the 12 months prior to MRT-SH enrollment, followed by Black, non-Hispanic clients. While all racial/ethnic groups had statistically significant decreases in service use, White, non-Hispanic clients experienced the largest decrease in inpatient days, and Hispanic clients experienced the largest decrease in ED visits. Black clients experienced the smallest decrease in both of these metrics, though these reductions were still significant.

Table 6. Average Inpatient Days and Emergency Visits by Race/Ethnicity, Pre- and Post-Enrollment

	Inpatient Days Pre	Inpatient Days Post	% Change	Sig.	ED Visits Pre	ED Visits Post	% Change	Sig.
White, non-Hispanic (n=1,219)	12.4	6.6	-47%	***	3.7	2.7	-27%	***
Black, non-Hispanic (n=1,427)	9.0	6.5	-28%	***	2.8	2.3	-18%	***
Hispanic, any race (n=806)	7.2	4.6	-36%	***	2.6	1.8	-31%	***
Multiracial or Other Race (n=201)	9.3	4.7	-49%	*	2.4	1.8	-25%	**

*** p =<0.001, * p > 0.01 & =< 0.05

The findings for gender and race indicate that women and Black clients do not experience the same magnitude of benefits from the program as men and White and Hispanic clients. This may indicate that programs need to do more to address the unique challenges of female and Black clients, or it may simply be an artifact of the more general finding that

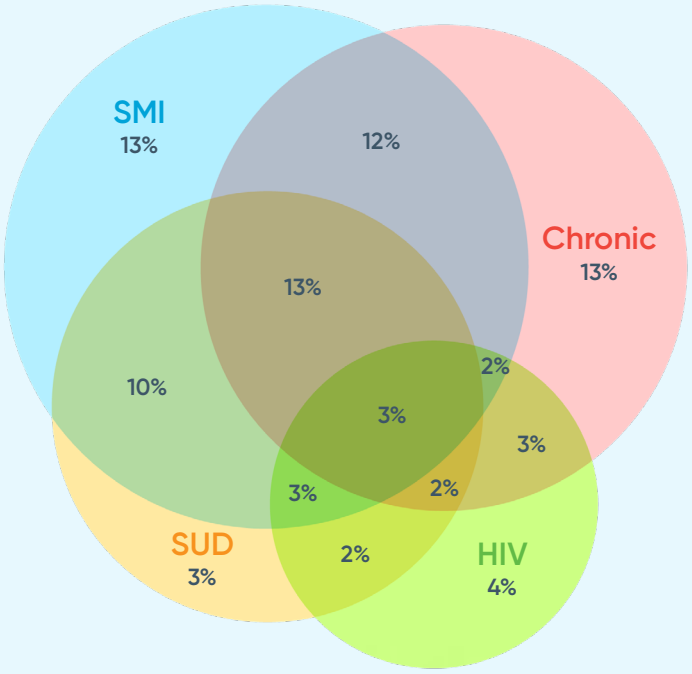
those with the highest utilization levels in the pre-period (in this case, men and White clients) appear to have the largest percentage reductions in the post-period.

By diagnosis

Sixty percent of the MRT-SH clients had a diagnosis of at least one severe mental illness, 41% had a diagnosis of at least one substance use disorder, 24% were HIV-positive, and 52% had a diagnosis of at least one of 11 common chronic medical conditions[44]. Nine percent of clients had none of these conditions[45].

The extent of comorbidities between these types of conditions is striking. Fully 24% of MRT-SH clients have a diagnosis in at least three of these categories, and 3.5% have a diagnosis in all four categories. It should also be noted that many clients have multiple diagnoses within each of these categories – that is, more than one severe mental illness, substance use disorder, or chronic medical condition.

Figure 1. Overlap Between Types of Chronic Conditions among MRT-SH Enrollees



Note: Not shown are substance use + chronic medical conditions (3%), severe mental illness + HIV (3%), and none (9%).

Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

Statistically significant reductions in both inpatient days and emergency department visits were obtained for clients with each of these types of conditions, with persons with substance use disorders experiencing the largest average net reductions (8.1 inpatient days and 1.6 emergency department visits). Clients without any of these conditions had substantially lower utilization than other clients, and average inpatient days increased slightly but significantly following MRT-SH enrollment. Average number of ED visits did not change significantly for this group.

[44] Hypertension, coronary heart disease, cerebrovascular disease, myocardial infarction, diabetes, asthma, chronic obstructive pulmonary disorder (COPD), chronic kidney disease, congestive heart failure (CHF), osteoarthritis, angina.

[45] It should be noted that diagnoses were determined by primary diagnosis on at least one Medicaid claim during the 12-month pre-enrollment period. Some people with diagnosed conditions may not have had any claims for that condition during the pre-period. Further, some people may have chronic conditions that were not included among those identified in the analysis.

Table 7. Average Inpatient Days and Emergency Visits by Diagnostic Group, Pre- and Post-Enrollment

	Inpatient Days Pre	Inpatient Days Post	Sig.	Num ER Pre	Post ER sum	Sig	% Change	Sig.
Severe mental illness (n=2,189)	13.1	7.2	***	4	2.8	***	-27%	***
Substance use disorder (n=1,489)	17.4	9.3	***	4.8	3.2	***	-18%	***
Chronic medical condition (n=1,887)	10.7	6.9	**	4.1	3	***	-31%	***
HIV (n=858)	8.1	6.1	***	2.8	2.3	***		
None of above (n=332)	1.6	1.8	***	0.5	0.7	n.s.		
3 or more of above conditions (n=753)	16.5	9.4	***	5.8	3.8	***		
All 4 of the above conditions (n=127)	16.6	11.5	**	5.3	3.3	***	-25%	**

Note: There is significant overlap between these diagnostic groups; the categories are not mutually exclusive.

*** p =<0.001, ** p > 0.001 & =< 0.01, n.s. = not significant

By Health Coverage and Program

During the 12 months prior to MRT-SH enrollment, 70% of clients were enrolled in managed care, 55% were enrolled in a Health Home, and 23% were dually eligible for both Medicaid and Medicare.

MRT-SH clients who were enrolled in managed care during the 12 months prior to their MRT-SH enrollment had higher average pre-period utilization of inpatient and emergency care than those not in managed care[46]. Both groups had significant post-period decreases in their utilization.

A similar result was found for Health Homes. Clients enrolled in a Health Home during the 12 months prior to MRT-SH enrollment had higher utilization rates than clients who were not, but significant decreases were found for both groups.

Clients who were dually enrolled in Medicare and Medicaid during the 12 months prior to MRT-SH enrollment had lower utilization rates than other clients, probably because they tended to be the older clients with lower rates of behavioral health conditions. Again, both groups experienced significant decreases in utilization between the pre- and post-enrollment periods.

Table 8. Average Inpatient Days and Emergency Visits by Health Coverage Characteristics, Pre- and Post-Enrollment

		Inpatient Days			ED Visits		
		Pre	Post	Sig	Pre	Post	Sig
Managed Care (n=2,569)	Yes	10.4	6.4	***	3.5	2.6	***
	No	8.5	5.2	***	2.1	1.6	**
Health Home (n=2,018)	Yes	11.4	6.6	***	3.9	2.8	***
	No	7.8	5.3	***	2.0	1.7	***
Dual Eligible (n=821)	Yes	7.8	4.9	***	1.9	1.5	***
	No	10.4	6.4	***	3.4	2.5	***

*** p =<0.001, ** p > 0.001 & =< 0.01

[46] This is not necessarily a causal relationship.

There was, however, some variation by program in the extent of the reduction in service use. Specifically, the AIDS Institute program serving the New York City area (services only), OASAS-RS, OMH RSS programs, and HHAP showed particular promise in terms of reducing inpatient days and/or emergency department visits.

Table 9. Average Number of Inpatient Days and Emergency Visits by Program, Pre- and Post-Enrollment

MRT-SH Program	Inpatient Days Pre	Inpatient Days Post	Sig	Num ER Pre	Post ER sum	Sig
Housing and Community Renewal (HCR)						
East 99th Street	3.0	2.9	n.s.	1.3	1.3	n.s.
3361 Third Ave	3.3	2.4	n.s.	2.4	1.0	**
Boston Road	4.2	4.6	n.s.	3.4	2.7	n.s.
Norwood Terrace	10.6	6.2	*	6.6	3.2	†
VOA Creston	3.0	3.7	n.s.	3.9	2.0	*
Expand Access to Homes	1.0	4.4	n.s.	0.2	0.3	n.s.
Office of Temporary and Disability Assistance (OTDA)						
Homeless Housing Assistance Program: Son House/ Providence	4.9	3.1	n.s.	2.7	3.1	n.s.
Eviction Prevention for Vulnerable Adults	3.1	2.3	n.s.	1.6	1.4	†
Homeless Senior & Disabled Pilot	2.2	2.9	n.s.	1.1	1.0	n.s.
Office of Mental Health (OMH)						
Rental Subsidies – Brooklyn	7.8	5.0	*	2.0	1.5	**
Rental Subsidies - Statewide	13.1	6.6	***	4.1	3.1	***
Office of Alcohol and Substance Abuse Services (OASAS)						
OASAS Rental Subsidies	27.2	12.8	***	5.3	3.5	***
Office for Persons with Developmental Disabilities (OPWDD)						
OPWDD Rental Subsidies	0.5	0.8	n.s.	1.1	0.9	n.s.
AIDS Institute (AI)						
AI Services only	9.2	6.2	***	2.5	2.0	***
AI Services and Subsidies	4.2	6.9	n.s.	3.6	3.6	n.s.
AI Pilot Program	1.0	1.9	n.s.	1.9	1.4	n.s.
Office of Health Insurance Programs						
Health Homes SH Pilot	14.7	8.5	***	6.2	3.9	***
Nursing Home to Independent Living (Transition clients)	11.5	7.0	***	3.3	2.8	n.s.
Senior SH Pilot	1.7	2.7	*	0.9	0.8	n.s.

*** p =<0.001, ** p > 0.001 & =< 0.01, * p > 0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not significant

PRIMARY AND PREVENTIVE CARE

Primary care[47]. During the pre-period, 52% of clients had at least one primary care visit, while this fell to 46% in the first year following MRT-SH enrollment. The average number of primary care visits dropped significantly, from 3.1 to 2.7.

Table 10. Primary Care Utilization, Pre- and Post-Enrollment (n=3,649)

	Pre	PostY1	Sig
Any primary care visit	52%	46%	***
Average # of primary care visits	3.1	2.7	***

*** p =<0.001

Clients in managed care and in health homes prior to MRT-SH enrollment had more primary care visits on average than other clients, but the pattern of fewer primary care visits following MRT-SH enrollment was true regardless of whether clients were in managed care plans or health homes prior to MRT-SH enrollment, or whether they were dually enrolled in Medicare and Medicaid.

Table 11. Average Number of Primary Care Visits by Health Coverage Characteristics, Pre- and Post-Enrollment

		Primary Care Visits		
		Pre	Post	Sig
Managed Care (n=2,569)	Yes	3.6	3.1	***
	No	2.0	1.7	**
Health Home (n=2,018)	Yes	3.7	3.1	***
	No	2.4	2.1	***
Dual Eligible (n=821)	Yes	2.1	1.3	***
	No	3.4	3.0	***

*** p =<0.001, ** p > 0.001 & =< 0.01

There were also few differences in primary care use by diagnoses, with all four diagnostic groups experiencing similar averages before MRT-SH enrollment and significant reductions in the following year.

[47] After extensive consultation with medical advisors, the definition we used for primary care was 1) an evaluation and management (E&M) visit 2) to a primary care provider (general medicine, internal medicine, family practice, nurse practitioner, obstetrics and gynecology, primary care clinic, general practice, general preventive medicine, public health – preventive medicine) 3) in an outpatient setting (physician group, multi-type group service, diagnostic and treatment center, hospital-based outpatient service, physician services, or nurse practitioner).

Table 12. Average Number of Primary Care Visits by Diagnosis, Pre- and Post-Enrollment

	Primary Care Visits		
	Pre	Post	Sig.
SMI (n=2,189)	4.0	3.2	***
SUD (n=1,489)	3.8	3.3	***
Chronic medical condition (n=1,887)	3.8	3.2	***
HIV (n=858)	3.8	3.7	*
None of above (n=332)	0.7	0.7	n.s.

Note: There is significant overlap between these diagnostic groups; the categories are not mutually exclusive.

*** p =<0.001, * p > 0.01 & =< 0.05, n.s. = not significant

A look at selected routine conditions (which together account for about 10% of primary care visits[48]) shows a reduction in visits for most of the conditions examined, implying that at least part of the reduction can be attributed to clients being less ill. These conditions were identified by Excellus Health[49] as constituting a high percentage of emergency department use for non-emergency conditions. It is worth noting that ED visits for these same conditions also decreased (Table 18), so the decrease in primary care visits does not indicate that patients are instead seeking care in the ED.

Table 13. Total Number of Visits to Primary Care Provider for Evaluation & Management of Routine Conditions (n=3,649)

	Pre	Post	Change	Sig.
Headaches	96	69	-28%	*
Ear infections	19	14	-26%	n.s.
Sinus infections	59	33	-44%	**
Sore throats	50	25	-50%	*
Back & neck problems	596	422	-29%	***
Nausea, diarrhea and constipation	85	67	-21%	n.s.
Abdominal pain	105	61	-42%	*
Urinary tract infection	36	33	-8%	n.s.
Bumps and bruises	12	8	-33%	n.s.
Joint pain	177	137	-23%	†
Sprains and strains	56	32	-43%	†
Total all conditions	**1,291**	**901**	**-30%**	***

*** p =<0.001, ** p > 0.001 & =< 0.01, * p > 0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not significant

[48] These conditions accounted for 11% of the E&M visits to primary care providers in the pre-period and 9% in the post-period.
[49] http://brand.excellusbcbs.com/infographics/er.php

BEHAVIORAL HEALTH UTILIZATION

Severe mental illness. An estimated 59% of MRT-SH clients have at least one diagnosed severe mental illness (SMI). Correspondingly, the MRT-SH population has high rates of utilization for severe mental illness. In the 12 months prior to MRT-SH enrollment, 12% had at least one inpatient admission and 11% had at least one emergency department visit with a primary diagnosis of SMI. Almost one in ten had at least one psychiatric inpatient stay (defined by rate code rather than diagnosis). All of these services, however, were used significantly less following MRT-SH enrollment. Clients also had a significantly lower volume of ED visits for SMI after enrollment in MRT-SH. While the use of Comprehensive Psychiatric Emergency Program (CPEP, a hospital-based emergency psychiatric service open at all times to patients of all ages, identified by rate codes) services declined, this change was not statistically significant.

Table 14. Inpatient and Emergency Utilization for Severe Mental Illness, Pre- and Post-Enrollment (n=3,649)

	Pre	Post	P-value
Any inpatient for mental health (defined by Dx)	12%	8%	***
Any ED visits for mental health (defined by Dx)	11%	7%	***
Average number of ED visits for mental health (defined by Dx)	0.21	0.14	***
Any Comprehensive Psychiatric Emergency Program (CPEP)	4.1%	3.6%	n.s.
Any psychiatric inpatient (defined by rate code)	9.9%	6.1%	***

*** p =<0.001, n.s. = not statistically significant

Substance use disorders. An estimated 40% of MRT-SH clients have at least one diagnosis of a substance use disorder (SUD). Correspondingly, the MRT-SH population has high rates of utilization for substance use disorder. In the 12 months prior to MRT-SH enrollment, 15% had at least one inpatient admission and 10% had at least one emergency department visit with a primary diagnosis of SUD. Six percent had at least one inpatient rehabilitation stay, while a smaller number had been through inpatient detox. All of these services, except detox, were used significantly less following MRT-SH enrollment. Clients also had a significantly lower volume of ED visits for SUD after enrollment in MRT-SH as well.

Table 15. Inpatient and Emergency Utilization for Substance Use Disorder, Pre- and Post-Enrollment (n=3,649)

	Pre	Post	P-value
Any inpatient for substance abuse	15%	11%	***
Any ED visits for substance abuse	10%	8%	***
Average number of ED visits for substance abuse	0.35	0.21	***
Any inpatient rehab	6.2%	3.9%	***
Any inpatient detox	3.3%	2.7%	†

*** p =<0.001, † p >0.05 & < 0.10

HIV AND OTHER CHRONIC MEDICAL CONDITIONS

HIV. An estimated 23% of MRT-SH clients have a diagnosis of HIV. In the 12 months prior to enrollment, 2% of MRT-SH clients had at least one inpatient admission with a primary diagnosis of HIV, and nearly 1% had at least one emergency department visit with this primary diagnosis. The percentage of clients with at least one inpatient admission for HIV decreased significantly, by almost half, in the post-enrollment period.

Cardiovascular conditions. Overall, nearly one-quarter of the clients (24%) have at least one cardiovascular diagnosis. These include several types of conditions, including coronary heart disease, cerebrovascular diagnoses (stroke), hypertension, congestive heart failure, angina, or an acute myocardial infarction (heart attack). The most common of these is coronary heart disease, affecting 12.8% of the clients, followed by cerebrovascular diagnoses (8.7%).

The percent of MRT-SH clients receiving inpatient or emergency department care for cardiovascular conditions is slightly lower in the period after MRT-SH enrollment than the period before, but these decreases are not statistically significant.

Diabetes. An estimated 20% of MRT-SH clients have diabetes. More than 1 in 100 clients had at least one inpatient admission for a primary diagnosis of diabetes in the year before their MRT-SH enrollment, and more than 2 in 100 had an ED visit for such a diagnosis. There were very slight changes in the year post-enrollment, but these were not statistically significant in either case.

Respiratory conditions. An estimated 20% of MRT-SH clients have a diagnosis of asthma and/or COPD, with 13% diagnosed with asthma and 10% diagnosed with COPD. One in every 40 clients had at least one inpatient stay for one of these respiratory disorders in the year prior to their MRT-SH enrollment; this rate persisted in the year following enrollment. More than one in 20 had at least one ED visit for asthma or COPD in the year prior to enrollment, with only a slight (and nonsignificant) decrease in the year following.

Table 16. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment (n=3,649)

	Any inpatient			Any ED visits		
Primary Dx on claim	Pre	Post	P-value	Pre	Post	P-value
HIV	2.0%	1.1%	***	0.9%	0.8%	n.s.
Cardiovascular conditions	2.5%	2.1%	n.s.	2.1%	1.7%	n.s.
Diabetes	1.1%	1.3%	n.s.	2.3%	1.9%	n.s.
Respiratory conditions	2.5%	2.5%	n.s.	5.2%	4.8%	n.s.

*** p =<0.001, n.s. = not significant

HOUSING-SENSITIVE CONDITIONS

There are a number of health conditions that are associated with homelessness and unstable housing. These include a number of infectious conditions that spread in congregate living situations such as shelters, and environmental injuries such as heat- and cold-related conditions and burn injuries obtained while trying to keep warm or cook in locations not meant for habitation. Many of these conditions are relatively uncommon, even in a housing-challenged population, while others can usually be managed with non-emergency outpatient care.

While inpatient stays for these conditions among MRT-SH clients generally decreased in the post-period, the decreases were not statistically significant either for individual conditions or for the total across conditions (probably in part because of the generally small numbers of those having these conditions to begin with).

Emergency department visits for housing-sensitive conditions also generally decreased (with ED visits for parasitic infections being a notable exception). The decrease in ED visits for respiratory infections was statistically significant at the 0.05 level, while the decrease in ED visits for pneumonia had a p-value of <0.10. The increase in ED visits for parasitic infections was, however, also statistically significant. The total of all of these conditions also declined significantly.

Table 17. Total Number of Inpatient Admissions and Emergency Department Visits for Housing-Sensitive Conditions, Pre- and Post-Enrollment (n=3,649)

	Any inpatient			Any ED visits		
	Pre	Post	Sig.	Pre	Post	Sig.
Tuberculosis	0	0	n.s.	1	0	n.s.
Sexually transmitted infections	0	1	n.s.	3	3	n.s.
Parasitic infections	0	0	n.s.	4	14	*
Respiratory infections	18	13	n.s.	220	166	*
Bacterial pneumonia	73	68	n.s.	94	66	†
Influenza	3	2	n.s.	15	8	n.s.
Cellulitis	73	77	n.s.	253	212	n.s.
Heat/cold related	2	0	n.s.	8	5	n.s.
Burns	5	2	n.s.	19	11	n.s.
All Housing-Sensitive Conditions	174	163	n.s.	617	485	***

*** p =<0.001, * p > 0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not statistically significant

PREVENTABLE ED USE

There are several different approaches to examining preventable ED use. The table below shows 11 categories of conditions identified by Excellus Health[50] as constituting a high percentage of emergency department use for non-emergency conditions. ED visits for almost all of these conditions declined following MRT-SH enrollment (the exceptions being ear infections and urinary tract infections), and most of them declined significantly.

Table 18. Total Number of Emergency Department Visits for Routine Complaints, Pre- and Post-Enrollment (n=3,649)

Excellus Conditions	Pre	Post	Change	Sig.
Headaches	227	146	-36%	*
Ear infections	9	21	+300%	†
Sinus infections	27	19	-30%	n.s.
Sore throats	45	41	-9%	n.s.
Back & neck problems	417	312	-25%	***
Nausea, diarrhea and constipation	211	158	-25%	*
Abdominal pain	552	437	-21%	**
Urinary tract infection	108	118	+9%	n.s.
Bumps and bruises	183	107	-42%	***
Joint pain	235	111	-52%	***
Sprains and strains	220	125	-43%	***
Total all conditions	**2,258**	**1,595**	**-29%**	***

*** p =<0.001, * p > 0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not statistically significant

[50] http://brand.excellusbcbs.com/infographics/er.php

Another approach, used by researchers at NYU[51], aims to categorize diagnoses according to the estimated percentage of ED visits for that condition that could have been avoided either: because they were non-emergent; because they could have been treated by a primary care doctor; or because they were avoidable if the patient had received adequate preventive care. The NYU team later created categories for ED visits that were potentially preventable on the basis of being related to drug or alcohol use, a mental health crisis, or an injury.

The analysis below assigns a condition to a particular category if the original research estimated it fell into that category at least 51% of the time. It is important to understand that not all of the ED visits in the "non-emergent" category, for example, were necessarily non-emergent, but were for conditions that are non-emergent more than half the time (e.g. pharyngitis, low back pain, nausea).

Every category of potentially avoidable ED visit decreased significantly between the year before and the year after MRT-SH enrollment. The sharpest declines were for ED visits that were alcohol- or drug-related.

Table 19. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment (n=3,649)

NYU Conditions	Pre	Post	Change	Sig.
Non-emergent	2316	1727	-25%	***
Emergent, but primary care treatable	1698	1426	-16%	***
Not primary care treatable, but avoidable	613	480	-22%	**
Alcohol-related	1008	596	-41%	***
Drug-related	311	189	-39%	***
Psychiatric-related	1024	693	-32%	***
Injury	1248	971	-22%	***

*** p =<0.001, ** p > 0.001 & =< 0.01

[51] http://www.ajmc.com/journals/issue/2014/2014-vol20-n4/emergency-department-visit-classification-using-the-nyu-algorithm

QUALITY OF LIFE

The FACT-GP scale is a quality of life measure used to assess various dimensions of well-being among those enrolled in Health Homes, with higher scores indicating better health within that dimension. A limited number of MRT-SH clients (n=231) had FACT-GPs taken during the 12 months before their MRT-SH enrollment and between six and 12 months after enrollment[52]. As shown below, these clients experienced significant increases in both their physical and social well-being between the two assessments. There were also very slight increases in emotional and functional well-being, which were not statistically significant. The increase in the overall score was also not statistically significant.

Table 20. FACT-GP scores, Pre- and Post-Enrollment (n=231)

FACT-GP scores	Pre	6-12 months post	% change in average score	Sig.
Physical well-being	16.1	17.2	+6.8%	**
Social well-being	9.3	10.1	+8.6%	*
Emotional well-being	10.4	10.8	+3.8%	n.s.
Functional well-being	11.1	11.5	+3.6%	n.s.
Overall	47.3	50.0	+5.7%	*

** p > 0.001 & =< 0.01, * p > 0.01 & =< 0.05, n.s. = not statistically significant

HOUSING STABILITY

Shelter data were available for this report from the Homeless Management Information System (HMIS) in New York City and in the Hudson Valley, Capital District, and Adirondack regions of the state. However, the quality of data points used in matching was sometimes inconsistent, so that even within those regions a client with no match to the shelter data may have in fact spent time in the shelter system but was listed under incorrect identifiers. In other words, clients identified with shelter stays are likely to have actually experienced shelter stays, but clients not identified with shelter stays may still have experienced shelter use.

Furthermore, shelter data were only available through 2016, so in order to look at a full post-year of data clients could only be included if they had enrolled in MRT-SH prior to the beginning of 2016. With these geographical and temporal limitations, the final sample size for this analysis was 2,337 clients.

One-quarter (26%) of this subsample of MRT-SH clients experienced documented shelter stays in the 12 months before MRT-SH enrollment. Only about 3% experienced any shelter use in the 12 months after MRT-SH enrollment, representing a significant decrease. The numbers were similar when we looked only at clients with two post-enrollment years of continuous Medicaid coverage.

Table 21. Documented shelter use among MRT-SH Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=2,337)	25%	3%	--	***	--	--
Pre vs. Y2 Post (n=1,972)	25%	3%	4%	***	***	***

*** p =<0.001

[52] There was also a smaller group of people (n=129) who had FACT-GPs taken during the 12 months before their MRT-SH enrollment and within 6 months after enrollment. This group showed a similar trend in their overall score (from 47.0 to 48.6) but the difference was not statistically significant, possibly due to the smaller sample size.

RETENTION AND REASONS FOR DISCHARGE

Retention in supportive housing was strong overall[53], with 87% of clients being retained at six months, 71% at a year, nearly half at two years, and one-third at three years. Among those clients who had been discharged (i.e., excluding the 44% of clients who were still enrolled at the time of the data pull in April 2018), the median length of stay was one year.

Table 22. Retention rate of MRT-SH clients by months since enrollment (n=3,649)

% Retained at:	
6 months	87%
1 year	71%
18 months	61%
2 years	46%
3 years	33%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those whose data was pulled while still enrolled who had not yet reached that amount of time were excluded from the denominator).

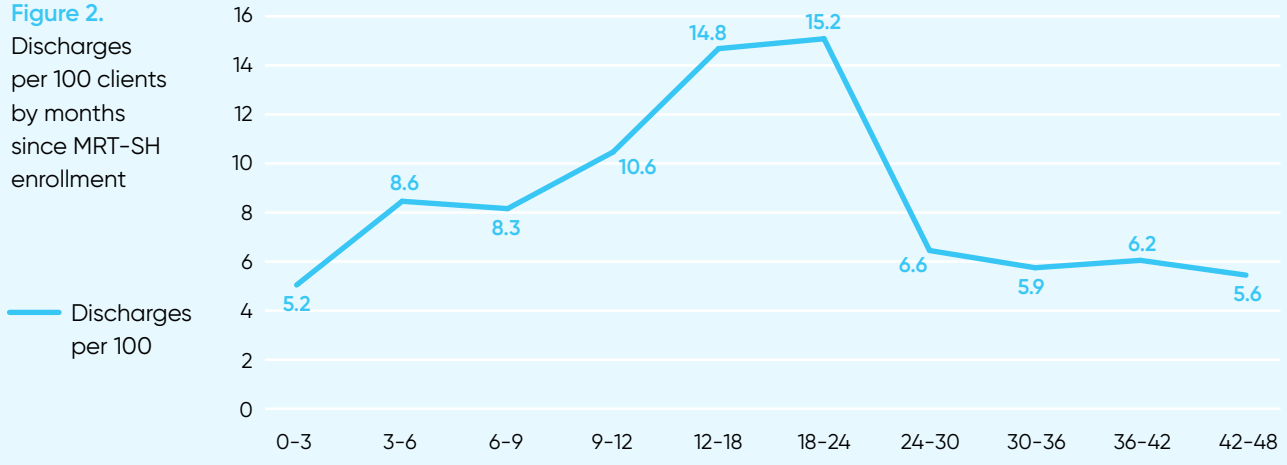
Table 23. One-year retention rates by demographic and clinical characteristics (n=3,649)

Gender	
Male	70%
Female	72%
Race/Ethnicity	
White, non-Hispanic	68%
Black, non-Hispanic	73%
Hispanic, any race	73%
Multiracial/Other	67%
Age	
Young Adult (<40)	68%
Middle Age	72%
Older Adult (60+)	79%
Diagnosis	
SMI	71%
SUD	65%
Chronic medical condition	72%

One-year retention rates varied by certain demographic characteristics and by diagnosis. Black and Hispanic clients were more likely to remain enrolled after one year than White clients and those who were multiracial or some other race. Retention also increased with age, with adults age 60 and older having the highest retention rates. Clients with an SUD had the lowest one-year retention rates, at 65%.

The discharge rate was low in the first few months after client enrollment, but then rose steadily until about 24 months. By this time people who remained in the program generally did not leave, and discharge rates dropped off steeply.

Figure 2. Discharges per 100 clients by months since MRT-SH enrollment



[53] It should be noted, however, that the sample is limited to clients with full continuous Medicaid coverage for both 12 months before and 12 months after MRT-SH enrollment, which may result in a sample that is biased towards people with longer retention.

Discharge reasons were reported by most programs (except for OMH programs, which reported post-discharge living situation instead). The reasons shown below are grouped loosely into reasons that are likely to generally reflect positive life events, those that are likely to generally reflect negative life events, and those that are neutral or undetermined. This grouping is a very loose categorization that may not hold true for particular clients – for example, family reunification could reflect that a client is moving in with relatives that will take care of him or her (assumed to be positive), or that he or she is forced to leave an adults-only housing unit in order to regain custody of children (perhaps not so positive).

More than half of discharges are associated with a code of "other" or "unknown," although this rate varies across programs. The most common reason for a client leaving MRT-SH is that they are moving into a private residence (which may overlap with family reunification or no longer being in need). The second most common reason for discharge is that the client was evicted or was disruptive or uncooperative. The third most common reason is that the client is no longer in need of housing because their employment or income status has changed.

Less common but clearly negative outcomes include a client being discharged because he or she is deceased, has been incarcerated, went into a homeless shelter, or simply abandoned the apartment with no contact with the program. While these very negative reasons for discharges are a small percentage of all discharges, when they are taken as a percentage of discharges with a valid reason (i.e. not unknown or "other") they cumulatively account for 15% of discharges. Evictions or disruptive behavior account for another 11% of valid discharge reasons.

Table 24. Reasons for MRT-SH discharge (or post-discharge living situation [OMH])

Generally positive		
Family reunification	53	2.5%
No longer in need	104	4.9%
Less restrictive setting	26	1.2%
No longer Medicaid eligible	10	0.5%
Private residence*	176	8.3%
	369	**17.4%**
Generally neutral/undetermined		
Moved out of county or state	28	1.3%
Court ruling	3	0.1%
No longer interested	80	3.8%
	111	**5.2%**
Generally negative		
Incarcerated*	49	2.3%
Deceased	54	2.6%
More restrictive setting	85	4.0%
Voluntary operated MH residential treatment*	49	2.3%
Evicted and/or disruptive	106	5.0%
Dissatisfied with program	8	0.4%
Hospitalized*	22	1.0%
Health reasons	47	2.2%
Residential substance abuse treatment*	24	1.1%
Abandoned apartment	26	1.2%
Went into homeless shelter*	15	0.7%
	485	**22.9%**
Other/unknown		
All other reasons	**548**	**25.9%**
Unknown reason	**598**	**28.3%**

*Based on or incorporates post-discharge living situation as reported by OMH programs

Not surprisingly, the reasons for discharge vary with length of enrollment. The most common reasons for discharge within 3 months of enrollment were moving to a private residence (11.7%), being transferred to a more restrictive setting (9.2%), being no longer appropriate for MRT-SH due to health reasons (6.1%), and being evicted and/or disruptive or uncooperative (5.6%). A higher percentage of clients were discharged during this period due to family reunification, incarceration, moving to a voluntary operated mental health residential treatment program, hospitalization, dissatisfaction with the program, or moving to a residential SUD treatment program as compared to later periods. This period was also the time when the highest percentage of clients was discharged due to abandoning the apartment and/or moving into a homeless shelter.

Between three and six months post-enrollment, the most common reasons for discharge were that the client moved to a private residence (8.7%), was no longer interested (7.8%), was evicted and/or disruptive or uncooperative (7.4%), or moved to a more restrictive setting. In fact, clients were more likely to leave because of lack of interest or eviction during this period than any other period.

The most common discharge reasons for clients who were discharged between six months and a year after MRT-SH enrollment were that they were no longer in need (9.9%) or because they were moving to a private residence (6.1%).

Table 25. Reasons for MRT-SH discharge (or post-discharge living situation [OMH]), by duration of enrollment

	0-3 months (n=196)	3-6 months (n=309)	6-12 months (n=586)	> 12 months (n=1028)
Family reunification	4.6%	2.2%	3.0%	1.9%
No longer in need	0.0%	1.6%	9.9%	4.0%
Less restrictive setting	0.0%	0.3%	1.6%	1.6%
No longer Medicaid eligible	1.0%	0.6%	0.2%	0.5%
Private residence*	11.7%	8.7%	6.1%	8.8%
	17.3%	**13.4%**	**20.8%**	**16.8%**
Generally neutral/undetermined				
Moved out of county or state	1.0%	1.9%	0.7%	1.6%
Court ruling	0.0%	0.3%	0.0%	0.2%
No longer interested	3.6%	7.8%	4.0%	2.5%
	4.6%	**10.0%**	**4.7%**	**4.3%**
Generally negative				
Incarcerated*	3.6%	1.6%	2.6%	2.2%
Deceased	0.5%	0.0%	2.2%	3.9%
More restrictive setting	9.2%	6.8%	5.3%	1.5%
Voluntary operated MH residential treatment*	4.5%	0.6%	1.4%	3.0%
Evicted and/or disruptive	5.6%	7.4%	5.1%	4.1%
Dissatisfied with program	1.0%	0.3%	0.5%	0.2%
Hospitalized*	2.0%	1.3%	1.2%	0.7%
Health reasons	6.1%	2.6%	2.8%	1.1%
Residential substance abuse treatment*	2.0%	2.9%	0.4%	1.0%
Abandoned apartment	2.6%	0.6%	1.9%	0.8%
Went into homeless shelter*	2.5%	0.3%	0.7%	0.5%
	39.6%	**24.4%**	**24.1%**	**19.0%**
Other/unknown				
All other reasons	15.8%	19.7%	18.6%	33.9%
Unknown reason	22.4%	32.0%	31.9%	26.6%
	38.2%	**51.7%**	**50.5%**	**60.5%**

*Based on or incorporates post-discharge living situation as reported by OMH programs

Program-Specific Findings

AIDS INSTITUTE PROGRAMS

AIDS Institute (AI) – Services Only

- **Program Description:** This program provides housing retention services to individuals living with HIV/AIDS in New York City; the majority of these participants were receiving a rental subsidy via other funding sources.
- **Population Served:** HIV-positive adults.
- **Program Start Date:** July 2012
- **Enrollment:** There were 881 clients enrolled in the AIDS Institute – Services Only program. Of these, 624 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. Of these, 529 had data from two years post-enrollment available.

Overall utilization

The AIDS Institute –Service Only participants have high rates of inpatient and emergency department utilization. In the 12 months prior to MRT-SH enrollment, 45% had at least one inpatient admission, and more than half (60%) had at least one emergency department visit. These patients averaged, in the year prior to their MRT-SH enrollment, 9.2 inpatient days and 2.5 emergency department visits. Both types of care were used less following MRT-SH enrollment, regardless of whether they were measured by any use of the services or by volume of use. The results were statistically significant for all measures except having at least one inpatient stay.

When data for 2 years post-enrollment are analyzed (n=529), the pre-period and Year 1 (Y1) post-period numbers differ little from the full sample. For all measures, the Year 2 (Y2) post-period is significantly or almost significantly lower than the pre-period, although usually higher than the Y1 post-period. Differences between the Y1 and Y2 post-periods are not statistically significant.

Table 26. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, AI - Services Only Program

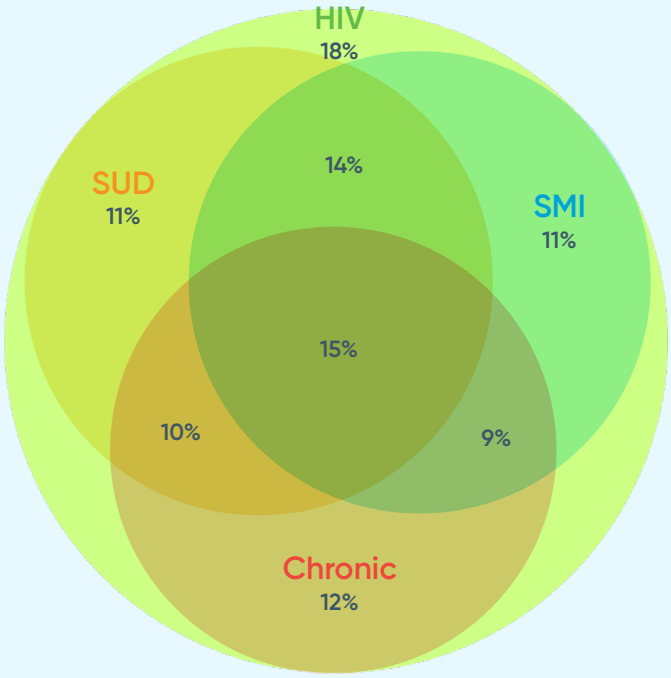
				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=624)	45%	41%	--	n.s.	--	--
Two year post-enrollment sample (n=529)	45%	41%	40%	†	†	n.s.
Average number inpatient days						
Full sample (all)	9.2	6.2	--	***	--	--
Two year post-enrollment sample (n=529)	8.6	6.1	7.1	***	**	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	60%	55%	--	*	--	--
Two year post-enrollment sample (n=529)	61%	55%	56%	*	†	n.s.
Average number of ED visits						
Full sample (all)	2.5	2.0	--	***	--	--
Two year post-enrollment sample (n=529)	2.6	2.1	2.2	***	*	n.s.

*** p =<0.001, ** p > 0.001 & =< 0.01, * p > 0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not statistically significant

Common conditions

All of the clients in this program are HIV-positive. Eighteen percent of clients in the AIDS Institute – Services Only program had HIV only, without any identified comorbidities. Fifteen percent, however, had at least one diagnosed SMI and at least one diagnosed SUD and at least one other chronic medical condition as well as HIV. Fourteen percent had HIV, at least one SMI, and at least one SUD.

Figure 3. Overlap Between Types of Chronic Conditions among AIDS Institute – Services Only Clients



Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

HIV. In the 12 months prior to MRT-SH enrollment, 10% had at least one inpatient admission and nearly 4% had at least one emergency department visit with a primary diagnosis of HIV. The percentage of clients with at least one inpatient admission for HIV decreased significantly, by almost half, in the post-enrollment period.

Severe Mental Illness (SMI). An estimated 48% of clients in the AIDS Institute – Services Only program have at least one diagnosed SMI. In the 12 months prior to MRT-SH enrollment, 6% had at least one inpatient admission with a primary diagnosis of SMI, and 5% had at least one emergency department visit with such a primary diagnosis. There was little change post-enrollment, with 5% of the clients having an inpatient stay for an SMI and 3% having an ED visit (although the latter change approached statistical significance).

Substance Use Disorder (SUD). An estimated 52% of AIDS Institute—Services Only clients have at least one diagnosis of an SUD. Correspondingly, this population has high rates of utilization for substance use disorder. In the 12 months prior to MRT-SH enrollment, 20% had at least one inpatient admission with a primary diagnosis of SUD, and 9% had at least one emergency department visit with such a primary diagnosis. While there were modest decreases in the percent of clients with any inpatient or ED care for SUD, none of the changes were statistically significant.

Table 27. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, AI – Services Only Program (n=624)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
HIV	10%	5%	***	4%	4%	n.s.
Severe mental illness	6%	5%	n.s.	5%	3%	†
Substance use disorder	20%	18%	n.s.	9.0%	7.5%	n.s.

*** p =<0.001, n.s. = not significant

Preventable ED use

The number of low-acuity or routine conditions treated in the ED decreased significantly following MRT-SH enrollment, from 295 to 212.

Other classifications of potentially avoidable ED visits decreased as well, but none of those changes were statistically significant except for visits for non-emergent conditions, which decreased by 23%.

Table 28. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment (n=624), AI – Services Only Program

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	295	212	-28%	***
NYU Conditions				
Non-emergent	340	262	-23%	*
Emergent, but primary care treatable	247	222	-10%	n.s.
Not primary care treatable, but avoidable	115	99	-14%	n.s.
Alcohol-related	64	46	-28%	n.s.
Drug-related	44	36	-18%	n.s.
Psychiatric-related	62	46	-26%	n.s.
Injury	157	129	-18%	n.s.

*** p =<0.001, * p > 0.01 & =< 0.05, n.s. = not significant

Housing stability

There was a statistically significant drop in shelter use between the pre- and Y1 post-periods. In Y2, shelter use rises slightly, but is still significantly lower than in the pre-period.

Table 29. Documented shelter use among AIDS Institute – Services Only Clients in the HMIS, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	1 Year Post	2 Years Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=609)	7%	2%	--	***	--	--
Pre vs. Y1 & Y2 Post (n=529)	6%	2%	3%	***	*	n.s.

*** p =<0.001, n.s. = not significant

Retention

Retention in supportive housing was relatively weak for this program, with less than half of the clients remaining enrolled for at least a year. The median length of enrollment was 10 months.

The most common reasons for discharge among these clients was that they were no longer interested (4.8%), that they moved to a more restrictive setting (2.9%), or that they were evicted and/or disruptive or uncooperative (3.6%). Two-thirds of discharges were for reasons unknown, including 18% who were discharged at the end of June 2016 when the program ended.

Table 30. Retention rate of MRT-SH clients by months since enrollment, AI – Services Only Program (n=624)

% Retained at:	
6 months	71%
1 year	43%
18 months	25%
2 years	16%
3 years	7%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those still enrolled who had not yet reached that amount of time were excluded from the denominator).

Table 31. Reasons for MRT-SH discharge, AI-Services Only Clients (n=624)

Generally positive	
Family reunification	1.6%
No longer in need	0.5%
Less restrictive setting	0.2%
No longer Medicaid eligible	0.0%
	2.3%
Generally neutral/undetermined	
Moved out of county or state	1.1%
Court ruling	0.0%
No longer interested	4.8%
	5.9%
Generally negative	
Incarcerated	0.5%
Deceased	0.3%
More restrictive setting	2.9%
Evicted and/or disruptive	3.6%
Dissatisfied with program	0.6%
Hospitalized	0.2%
Health reasons	1.9%
Residential substance abuse treatment	1.1%
Abandoned apartment	0.6%
	11.7%
Other/unknown	
All other reasons	13.6%
Unknown reason	66.5%
	80.1%

AIDS Institute (AI) – Services and Subsidies

- **Program Description:** This program provides rental subsidies and housing retention services to individuals living with HIV/AIDS outside of New York City.
- **Population Served:** HIV-positive adults, often referred by Health Homes
- **Program Start Date:** October 2012
- **Enrollment:** There were 439 clients enrolled in the AIDS Institute – Services and Subsidies program; 149 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. Of these, 84 had data from two years post-enrollment available.

Overall utilization

The AIDS Institute – Services and Subsidies participants have high rates of inpatient and emergency department utilization. In the 12 months prior to MRT-SH enrollment, 40% had at least one inpatient admission, and nearly three-quarters (72%) had at least one emergency department visit. These patients averaged, in the year prior to their MRT-SH enrollment, 4.2 inpatient days and 3.6 emergency department visits. Both the likelihood and volume of inpatient care increased following MRT-SH enrollment, but the changes were not statistically significant. Similar results are found when data are examined for 2 years post-enrollment, although the increase in the percentage with at least one inpatient stay is closer to being statistically significant. There were no statistically significant changes in ED utilization.

Table 32. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, AI Services and Subsidies Clients

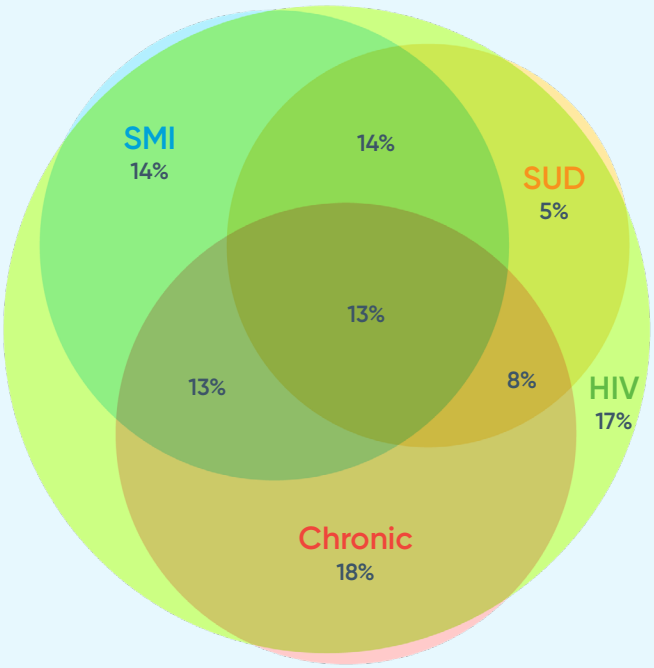
				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=149)	40%	47%	--	n.s.	--	--
Two year post-enrollment sample (n=21)	33%	45%	37%	†	n.s.	n.s.
Average number inpatient days						
Full sample (all)	4.2	6.9	--	n.s.	--	--
Two year post-enrollment sample (n=21)	4.3	6.9	6.6	n.s.	n.s.	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	72%	68%	--	n.s.	--	--
Two year post-enrollment sample (n=21)	71%	66%	68%	n.s.	n.s.	n.s.
Average number of ED visits						
Full sample (all)	3.6	3.6	--	n.s.	--	--
Two year post-enrollment sample (n=21)	3.1	3.3	3.2	n.s.	n.s.	n.s.

† p >0.05 & < 0.10, n.s. = not significant

Utilization for common conditions

All of the clients in this program were HIV-positive. Seventeen percent of clients in the AIDS Institute – Services and Subsidies program had HIV only, without any identified comorbidities, and 18% had HIV and another chronic medical condition. Thirteen percent, however, had at least one diagnosed SMI and at least one diagnosed SUD and at least one other chronic medical condition as well as HIV.

Figure 4. Overlap Between Types of Chronic Conditions among AIDS Institute – Services and Subsidies Clients



Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

HIV. The percentage of clients with at least one inpatient stay or at least one ED visit with a primary diagnosis of HIV both declined following MRT-SH enrollment. The decrease in ED visits was particularly pronounced, but neither result was statistically significant.

Severe mental illness. Fifty-four percent of the clients in the AIDS Institute – Services and Subsidies program had a diagnosis of severe mental illness in addition to their diagnosis of HIV. Use of inpatient and emergency services for SMI was relatively low prior to MRT-SH enrollment, with 8% having at least one inpatient stay for SMI and 10% having at least one ED visit. There were not significant changes in their use of these services in the year following MRT-SH enrollment.

Substance use disorder. Thirty-eight percent of the clients in the AIDS Institute – Services and Subsidies program had a diagnosis of a substance abuse disorder in addition to HIV. Close to 1 in 10 clients experienced at least one inpatient stay (8.3%) or ED visit (9.0%) for a primary diagnosis of SUD in the year previous to MRT-SH enrollment. Clients are somewhat less likely to have experienced an ED visit for SUD in the year following MRT-SH enrollment, but these changes are not statistically significant.

Table 33. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, AI Services and Subsidies Clients (n=149)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
HIV	7%	6%	n.s.	6%	3%	n.s.
Severe mental illness	8%	9%	n.s.	10%	8%	n.s.
Substance use disorder	8%	9%	n.s.	9%	6%	n.s.

*** p =<0.001, n.s. = not significant

Preventable ED use

As measured by the conditions identified by Excellus, the program was relatively unusual in that potentially preventable ED visits actually increased after MRT-SH enrollment. This was not statistically significant, however.

The patterns among other classifications of potentially avoidable ED visits varied. Visits for non-emergent or primary care-treatable conditions increased, as did ED visits for drug-related conditions. Visits for avoidable conditions and those related to alcohol use, mental health problems, or injuries decreased. None of those changes was statistically significant.

Table 34. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, AI Services and Subsidies Clients (n=149)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	96	113	+18%	n.s.
NYU Conditions				
Non-emergent	100	117	+17%	n.s.
Emergent, but primary care treatable	97	101	+4%	n.s.
Not primary care treatable, but avoidable	38	26	-32%	n.s.
Alcohol-related	13	10	-23%	n.s.
Drug-related	11	15	+36%	n.s.
Psychiatric-related	35	31	-11%	n.s.
Injury	70	56	-20%	n.s.

n.s. = not significant

Housing stability

Shelter data were available for a relatively small percentage of these clients. Among these, nearly one in five (19%) had at least one pre-period shelter stay. This decreased to 9% in the first post-period year, but this drop was not quite statistically significant. Looking at the subgroup with a 2-year post-period, the Y2 percentage was lower than the Y1 percentage, and significantly different from the pre-period, although Y1 and Y2 were not significantly different from one another.

Table 35. Documented shelter use among AI Services and Subsidies Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=65)	19%	9%	--	†	--	--
Pre vs. Y1 & Y2 Post (n=57)	19%	11%	5%	n.s.	**	n.s.

*** p =<0.001, n.s. = not significant

Retention

The AIDS Institute-Services and Subsidies program has a better track record of retention than its counterpart offering services only, and is comparable to that of the MRT-SH programs overall. More than two-thirds of clients were still in the program after a year, and fully one-third remained after 3 years. The median duration of enrollment at time of discharge was 11.2 months.

Table 36. Retention rate of AI Services and Subsidies clients by months since enrollment (n=149)

% Retained at:	
6 months	83%
1 year	69%
18 months	60%
2 years	45%
3 years	33%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those still enrolled who had not yet reached that amount of time were excluded from the denominator).

Unfortunately, a reason for discharge is not available for most of these clients. Among the few with a valid discharge reason, the two most common reasons for leaving were disruptive behavior or that the client was deceased. The third most common reason was that the client was no longer interested.

Table 37. Reasons for MRT-SH discharge, AI Services and Subsidies Clients (n=85)

Generally positive	
Family reunification	0.0%
No longer in need	1.4%
Less restrictive setting	0.0%
No longer Medicaid eligible	0.7%
	2.1%
Generally neutral/undetermined	
Moved out of county or state	2.1%
Court ruling	0.0%
No longer interested	2.8%
	4.9%
Generally negative	
Incarcerated	1.4%
Deceased	3.5%
More restrictive setting	0.7%
Evicted and/or disruptive	3.5%
Dissatisfied with program	0.0%
Hospitalized	0.0%
Health reasons	0.0%
Residential substance abuse treatment	0.0%
Abandoned apartment	0.0%
	9.1%
Other/unknown	
All other reasons	4.9%
Unknown reason	79.2%
	84.1%

AIDS Institute Pilot Program

- **Program Description:** The pilot offered rental assistance to homeless and unstably housed Health Home-eligible individuals in New York City who were diagnosed with HIV infection but medically ineligible for the existing HIV-specific enhanced rental assistance program for New Yorkers with AIDS or advanced HIV-illness. The pilot was phased out after the 2016 expansion of New York City's enhanced rental assistance program to all individuals with HIV infection.
- **Population Served:** HIV-positive adults.
- **Program Start Date:** December 2014
- **Enrollment:** There were 35 clients enrolled in the AIDS Institute Pilot Program; 17 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. Of these, 11 had data from two years post-enrollment available. Given this small group, only an abbreviated set of measures were analyzed for this program, and inferential statistics were not performed.

Overall utilization of inpatient and emergency services

The clients in the AIDS Institute pilot program had high rates of inpatient stays (with nearly one-third having at least one stay in the year before MRT-SH enrollment) and of ED visits (with nearly two-thirds having at least one ED visit in the year before enrollment). While the percent of participants with at least one inpatient stay decreased following MRT-SH enrollment, the average number of inpatient days increased. Both the percentage with any ED use and the volume of ED use decreased. This program had too few clients to allow inferential statistical testing, so p-values are not presented here.

Table 38. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, AI Pilot Clients (n=17)

	Pre	Post
Inpatient utilization		
Any inpatient care	35%	12%
Average number inpatient days	1.0	1.9
Emergency department utilization		
Any ED visits	65%	41%
Average number of ED visits	1.9	1.4

HIV-specific measures

None of the clients in this program had inpatient stays or ED visits for a primary diagnosis of HIV, either before or after their MRT-SH enrollment.

Key findings: AIDS Institute Programs

Clients in the AIDS Institute – Services Only program experienced significant reductions in:

- Average number of inpatient days, percent with any ED visits, and average number of ED visits
- Percent with any inpatient stays for HIV
- ED visits for routine and non-emergent conditions
- Shelter use

Clients in the AIDS Institute – Services and Subsidies program experienced a significant decrease in shelter use, but only in the second year after MRT-SH enrollment. Clients in the AIDS Institute – Pilot Program experienced reductions in the likelihood of inpatient care and ED care, but the sample size was too small for significance testing.

HOUSING AND COMMUNITY RENEWAL (HCR) PROJECTS

Metro East 99th Street

- **Program Description:** East 99th Street includes 175 MRT units in Manhattan built during the 2013 decommissioning of the Goldwater Hospital on Roosevelt Island as a housing option for physically disabled adults who did not qualify for existing New York City SH programs.
- **Population Served:** This program serves elderly or disabled adults referred from the former Coler-Goldwater facility and other nursing homes and hospitals owned by New York City Health + Hospitals.
- **Earliest MRT-SH Enrollment Date:** November 2014
- **Enrollment:** There were 193 clients enrolled in the HCR Metro East 99th project between November 2014 and January 2017; 150 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. Of these, 130 had data from two years post enrollment available.

Overall utilization of inpatient and emergency services (MDW)

In the year prior to MRT-SH enrollment, more than one-quarter of Metro East 99th clients (28%) had at least one inpatient stay, and close to half (44%) had at least one ED visit. These numbers increased slightly but not significantly in the year following MRT-SH enrollment. There were also no significant findings for the 2-year subsample.

Table 39. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, Metro East 99th Street Clients

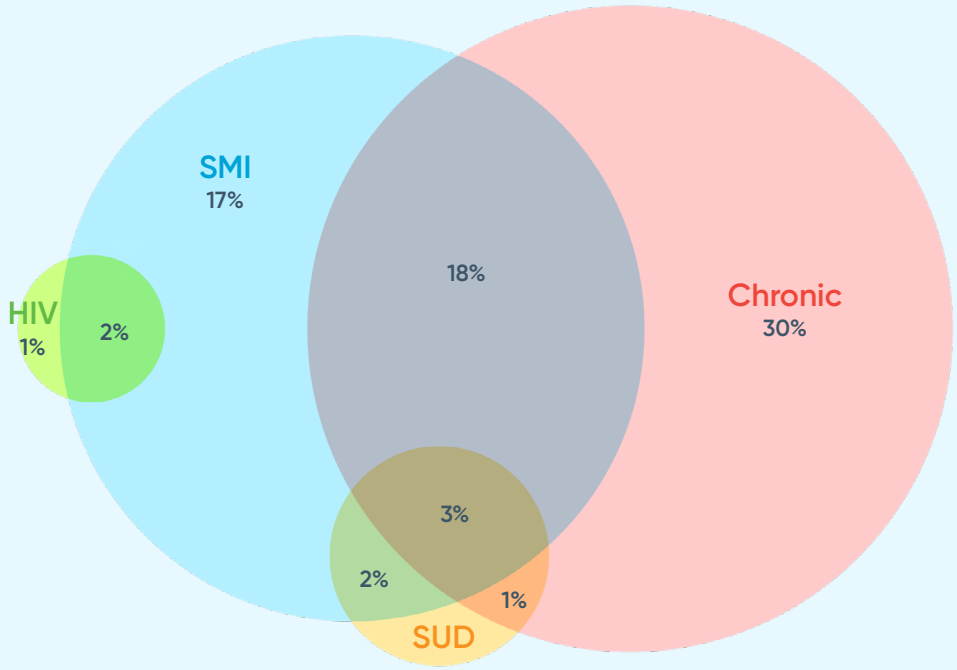
				P-value		
	Pre	Y1 Post	Y1 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=150)	28%	30%	--	n.s.	--	--
Two year post-enrollment sample (n=130)	28%	27%	35%	n.s.	n.s.	n.s.
Average number inpatient days						
Full sample (all)	3.0	2.9	--	n.s.	--	--
Two year post-enrollment sample (n=130)	3.1	2.4	3.0	n.s.	n.s.	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	44%	46%	--	n.s.	--	--
Two year post-enrollment sample (n=130)	44%	44%	41%	n.s.	n.s.	n.s.
Average number of ED visits						
Full sample (all)	1.3	1.3	--	n.s.	--	--
Two year post-enrollment sample (n=130)	1.2	1.3	1.0	n.s.	n.s.	n.s.

n.s. = not significant

Common conditions in the Metro East 99th Street program

Over half of the clients in the Metro East 99th Street project (52%) had a chronic medical condition, and nearly as many had a severe mental illness (42%). Twenty-one percent had both an SMI and a chronic medical condition, while smaller numbers also had an SUD (6%) or HIV (3%).

Figure 5. Overlap between types of chronic conditions among East 99th Street Clients



Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding). This does not include the 26% of East 99th Street clients who do not have pre-period claims for any of the selected conditions.

Severe mental illness. An estimated 42% of clients in the HCR East 99th Street project had a diagnosis of severe mental illness. Use of inpatient and ED services for SMI was low, however. Both the percentage with at least one inpatient stay and the percentage with at least one ED visit increased slightly after MRT-SH enrollment, but the change was not statistically significant.

Diabetes. An estimated 28% of the clients in the HCR East 99th Street project had a diagnosis of diabetes, but inpatient and emergency department care with a primary diabetes diagnosis were relatively uncommon, and did not change significantly after MRT-SH enrollment.

Table 40. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, Metro East 99th Clients (n=150)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	1%	3%	n.s.	1%	3%	n.s.
Diabetes	1%	1%	n.s.	2%	2%	n.s.

Note: Significance testing is done with the McNemar test, n.s. = not significant

Preventable ED Use

There was a slight decrease in ED visits for the routine conditions identified by Excellus, but this change was not statistically significant.

There was, however, a significant increase in the number of ED visits for conditions classified by NYU as emergent but primary care treatable, which increased from 34 in the pre-period to 51 in the 12-month post-period. It is not clear why this increase may have occurred.

Table 41. Potentially Avoidable ED Visits, Pre- and Post-Enrollment, Metro East 99th Clients (n=150)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	58	52	-10%	n.s.
NYU Conditions				
Non-emergent	63	66	+51%	n.s.
Emergent, but primary care treatable	34	51	+50%	*
Not primary care treatable, but avoidable	8	7	-13%	n.s.
Alcohol-related	4	1	-75%	n.s.
Drug-related	0	1	--	n.s.
Psychiatric-related	2	6	+300%	n.s.
Injury	17	12	-29%	n.s.

* p > 0.01 & =< 0.05, n.s. = not significant

Housing stability

There was a statistically significant drop in the percentage of East 99th Street clients who had any shelter use in the pre-period versus the Y1 post period, from 11% to none. The lack of post-period shelter use continued through Y2 for these clients.

Table 42. Documented shelter use among Metro East 99th Street Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=65)	11%	0%	--	***	--	--
Pre vs. Y1 & Y2 Post (n=57)	12%	0%	0%	***	***	n.s.

*** p =<0.001, n.s. = not significant

Retention and Discharge Reasons

Like the HCR Capital Projects overall, Metro East 99th had a very low rate of attrition. There are not enough cases to analyze.

Access to Home

- **Program Description:** The Access to Home program provides grants to eligible applicants to make accessibility modifications to existing owner-occupied or rental dwelling units occupied by persons with disabilities that also receive Medicaid assistance.
- **Population Served:** This program serves persons who are on Medicaid and are physically disabled or have substantial difficulty with activities of daily living (ADLs).
- **Earliest MRT-SH Enrollment Date:** February 2016
- **Enrollment:** There have been 94 clients enrolled in the Access to Home project to date. Twenty-one met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. None had data from two years post enrollment available. Because of the small sample size, only an abbreviated set of measures are analyzed for this program, and inferential statistics were not performed.

Overall Inpatient and ED Utilization

The clients in Access to Home had moderately high rates of inpatient and ED use in the year prior to their MRT-SH enrollment, with 24% having at least one inpatient stay and 14% having at least one ED visit. On average, these clients had 1.0 inpatient days and 0.2 ED visits during the pre-period. In the year following MRT-SH enrollment, however, the percentage with inpatient use decreased, while the average number of inpatient days increased markedly. The percent with at least one ED visit did not change; nor did the volume of ED visits. Due to the small sample size, p-values are not presented here.

Table 43. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, Access to Home Clients (n=21)

	Pre	Post
Inpatient utilization		
Any inpatient care	24%	19%
Average number inpatient days	1.0	4.4
Emergency department utilization		
Any ED visits	14%	14%
Average number of ED visits	0.2	0.3

Housing and Community Renewal (HCR) Behavioral Health Capital Projects - Combined

There were 159 clients who met the coverage criteria across four HCR capital projects (Third Avenue, Boston Road, Norwood Terrace, VOA Creston) that were targeted to a population with behavioral health diagnoses. Those projects with >25 eligible clients will be broken out separately, but some of projects have small enough Ns that achieving statistical significance in any results may be difficult. Therefore, these four capital projects are examined first in combination before presenting data from individual projects. (Please see individual project sections for project descriptions.)

Overall utilization of inpatient and emergency services

While all measures of overall inpatient and ED use decreased in the year following MRT-SH enrollment, the decreases are generally modest and not statistically significant. The exception is the average number of ED visits, which declined from 3.8 to 2.4 (p=<0.001).

When clients with continuous Medicaid coverage for 2 years post-enrollment are analyzed, there is an increase in the percent of those with at least one inpatient stay in the second year (Y2) versus the first year (Y1) and the pre-period. There is also an increase in the number of inpatient days. There is a decrease in the percent with at least one ED visits in Year 2 compared to Year 1 and the pre-period, but these differences are not statistically significant. However, there is a significant

decrease in the number of ED visits in both Y1 and Y2 compared to the pre-period, although the two post-period years are not significantly different from each other.

Table 44. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, HCR Capital Project Clients

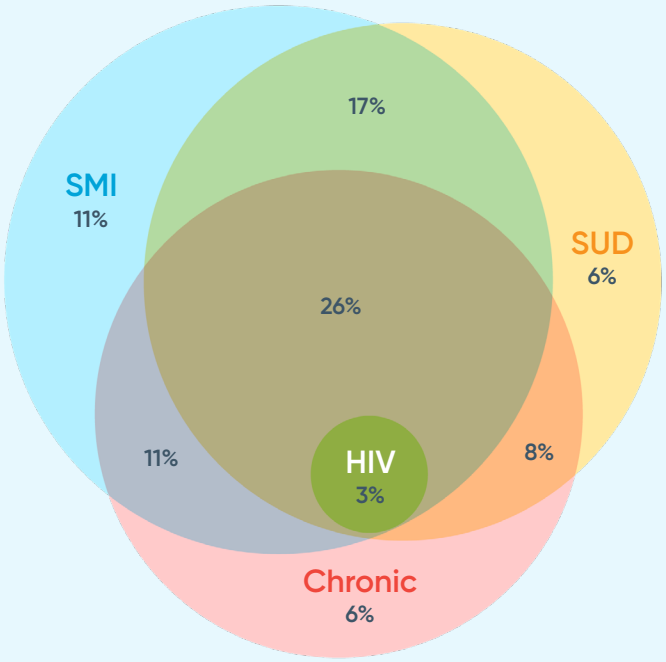
				P-value		
	Pre	Y1 Post	Y1 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=159)	35%	31%	--	n.s.	--	--
Two year post-enrollment sample (n=23)	26%	22%	30%	n.s.	n.s.	n.s
Average number inpatient days						
Full sample (all)	5.0	4.3	--	n.s.	--	--
Two year post-enrollment sample (n=23)	4.0	3.3	6.1	n.s.	n.s.	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	70%	63%	--	n.s.	--	--
Two year post-enrollment sample (n=23)	78%	70%	61%	n.s.	n.s.	n.s.
Average number of ED visits						
Full sample (all)	3.8	2.4	--	***	--	--
Two year post-enrollment sample (n=23)	3.9	1.8	1.6	*	*	n.s.

*p > 0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not significant

Common Conditions in HCR Capital Projects

The clients in the HCR behavioral health capital projects had very high rates of comorbidities. Nearly half (47%) had both an SMI and an SUD. Of those dually diagnosed individuals, 64% additionally had a chronic medical condition. Similarly, those with an SMI and no SUD and those with an SUD and no SMI had high rates of co-occurring chronic medical conditions (49% and 57%, respectively). Three percent had HIV. Eleven percent were not identified with any of these conditions, but this only means that they did not have a claim with one of these primary diagnoses during the pre-period, not that they did not have a qualifying condition.

Figure 6. Overlap Between Types of Chronic Conditions among HCR Project Clients



Note: Not shown are the 11% with no pre-period claims for the selected conditions.

Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

Severe Mental Illness (SMI). An estimated 69% of clients in the HCR behavioral health capital projects have at least one diagnosis of SMI. In the 12 months prior to MRT-SH enrollment, 7% had at least one inpatient admission with a primary diagnosis of SMI, and nearly 9% had at least one emergency department visit with such a primary diagnosis. Inpatient admissions for SMI did not change following MRT-SH enrollment, and although ED visits for SMI decreased, the change was not statistically significant.

Substance Use Disorder (SUD). An estimated 61% of clients in the HCR behavioral health capital Projects have at least one diagnosis of SUD. In the year prior to MRT-SH enrollment, 15% had at least one inpatient stay with a primary diagnosis of SUD, and 21% had at least one ED visits for such a diagnosis. These rates both decreased after MRT-SH enrollment, and the changes in the percentage with at least one ED visit for SUD was statistically significant.

Cardiovascular conditions. An estimated 36% of clients in the HCR behavioral health capital projects have at least one cardiovascular diagnosis. In the year prior to MRT-SH enrollment, 2% had at least one inpatient stay with a primary cardiovascular diagnosis, and 2% had at least one ED visit. These percentages did not change significantly in the year following MRT-SH.

Table 45. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, HCR Capital Project Clients (n=159)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	7%	7%	n.s	9%	6%	n.s.
Substance use disorder	15%	11%	n.s.	21%	13%	*
Cardiovascular conditions	2%	2%	n.s.	2%	2%	n.s.

* p =<0.05 & > 0.01, n.s. = not significant

Preventable ED use

There was a large and statistically significant decline in ED use for the routine conditions identified by Excellus. Using the classifications developed by NYU, a similar pattern emerged. ED visits for non-emergent conditions decreased significantly, as did conditions deemed avoidable. The HCR clients were also significantly less likely to show up in the ED for alcohol- or drug-related conditions or for injuries in the 12 months following their MRT-SH enrollment.

Table 46. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, HCR Capital Project Clients (n=159)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	93	42	-55%	***
NYU Conditions				
Non-emergent	130	77	-41%	**
Emergent, but primary care treatable	58	52	-10%	n.s.
Not primary care treatable, but avoidable	48	26	-46%	*
Alcohol-related	101	48	-52%	*
Drug-related	26	8	-69%	**
Psychiatric-related	35	20	-43%	n.s.
Injury	61	28	-54%	**

** p > 0.001 & =< 0.01, * p > 0.01 & =< 0.05,† p >0.05 & < 0.10, n.s. = not significant

Housing stability

While 87% of the clients in HCR projects had shelter use prior to their enrollment, none did so in the year following MRT-SH enrollment. Looking at those clients with 2-year data available, there was a slight increase in Y2 to 4% of clients with shelter use, but this was still dramatically lower than in the pre-period.

Table 47. Documented shelter use among HCR Capital Project Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=54)	87%	0%	--	***	--	--
Pre vs. Y1 & Y2 Post (n=23)	87%	0%	4%	***	***	n.s.

*** p =< 0.001, † p >0.05 & < 0.10

Retention

The HCR Capital Projects had very low rates of recorded attrition. Only 7 clients (2%) were discharged before 18 months of enrollment, and an additional 8 clients were discharged between 18 and 24 months. All other clients remained enrolled at the time of the data pull. The most common reason for discharge was the death of the client, accounting for 5 of the 15 discharges.

HCR Capital Projects: Boston Road

- **Program Description:** This is a HCR project supporting 94 units of permanent supportive housing in the Bronx, NY.
- **Population Served:** This program serves chronically homeless single adults who suffer from a serious and persistent mental illness or who are diagnosed as mentally ill and chemically addicted.
- **Earliest MRT-SH Enrollment Date:** January 2016
- **Enrollment:** There were 97 clients enrolled in the HCR Boston Road project between January 2016 and April 2017[54]. Of these, 76 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. This program was too new to allow any analysis of 2-year post-period data.

Overall utilization of inpatient and emergency services

The clients in the HCR Boston Road project had high rates of inpatient stays (with nearly one-third having at least one stay in the year before MRT-SH enrollment) and of ED visits (with nearly two-thirds having at least one ED visit in the year before enrollment). Inpatient use increased minimally following MRT-SH enrollment, while ED use decreased. Neither change was statistically significant.

Table 48. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, Boston Road Clients (n=76)

	Pre	Post	P-value
Inpatient utilization			
Any inpatient care	30%	33%	n.s.
Average number inpatient days	4.2	4.6	n.s.
Emergency department utilization			
Any ED visits	64%	60%	n.s.
Average number of ED visits	3.4	2.7	n.s.

n.s. = not significant

Common conditions in the Boston Road project

Severe mental illness. An estimated 57% of clients in the Boston Road project had at least one SMI diagnosis[55]. Despite this high level of mental health conditions, there were relatively low rates of inpatient and ED use for SMI diagnoses in the pre-period. In contrast to most programs, the rates of utilization for these services increased following MRT-SH enrollment, but none of the changes were statistically significant.

Substance use disorder. An estimated 62% of the clients in the Boston Road project had at least one SUD diagnosis, and this was reflected in high rates of inpatient care and ED care. These services tended to decrease following MRT-SH enrollment, but these changes were not statistically significant.

[54] The last date from which the research team has an updated client list

[55] This reflects the percentage of clients with at least one Medicaid claim with a primary diagnosis of an SMI during the 12 months before MRT-SH enrollment. Clients who did not have a claim for an SMI during that period may still have a qualifying diagnosis.

Cardiovascular conditions. An estimated 38% of the clients in the Boston Road project had at least one cardiovascular diagnosis. Nearly 3% experienced an inpatient stay with a primary diagnosis of a cardiovascular condition in the year previous to MRT-SH enrollment, and the same number experienced an ED visit with such a diagnosis. There was not a statistically significant change in the year following MRT-SH enrollment.

Table 49. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, Boston Road Clients (n=76)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	3%	9%	n.s.	1%	7%	n.s.
Substance use disorder	16%	13%	n.s.	23%	14%	n.s.
Cardiovascular conditions	3%	1%	n.s.	3%	3%	n.s.

n.s. = not significant

Preventable ED Use

ED visits for routine complaints decreased following MRT-SH enrollment, but the numbers were so small that they were not statistically significant.

Boston Road clients experienced a drop in ED visits for non-emergent conditions, but this did not quite reach the level of statistical significance. There was a decrease in drug-related visits, which was close to statistical significance (p=0.052), and visits for injuries decreased significantly, by more than half.

Table 50. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, Boston Road Clients (n=76)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	35	20	-43%	n.s.
NYU Conditions				
Non-emergent	59	40	-32%	†
Emergent, but primary care treatable	26	28	+8%	n.s.
Not primary care treatable, but avoidable	17	13	-24%	n.s.
Alcohol-related	55	34	-38%	n.s.
Drug-related	12	5	-58%	†
Psychiatric-related	3	11	+267%	n.s.
Injury	24	11	-54%	**

** p > 0.001 & =< 0.01, † p >0.05 & < 0.10, n.s. = not significant

Housing stability

The Boston Road project is a relatively new project, and there was not sufficient enrollment prior to 2016 to allow a full examination of post-period data.

Retention and Discharge Reasons

Like the HCR Capital Projects overall, Boston Road had a very low rate of attrition. There are not enough cases to analyze.

HCR Capital Projects: Third Avenue

- **Program Description:** This is an HCR project supporting 38 units of permanent supportive housing in the Bronx, NY.
- **Population Served:** This program serves chronically homeless single adults who suffer from a serious and persistent mental illness or who are diagnosed as mentally ill and chemically addicted.
- **Earliest MRT-SH Enrollment Date:** September 2015
- **Enrollment:** There were 38 clients enrolled in the HCR Third Avenue project between September 2015 and December 2015. Of these, 34 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. Only 5 clients had data from two years post enrollment available, and so these analyses were not performed.

Overall Utilization of Inpatient and ED care

More than one-quarter of these clients experienced at least one inpatient stay in the year prior to MRT-SH enrollment, and almost two-thirds experienced at least one ED visit. While the percentage with at least one inpatient stay increased following MRT-SH enrollment, the average number of inpatient days decreased from 3.3 to 2.4. The percent of clients with at least one ED visit decreased substantially (from 65% to 44%), but this was not statistically significant given the small sample size. The average number of ED visits, however, did decrease significantly, from 2.4 to 1.0.

Table 51. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, Third Avenue Clients (n=34)

	Pre	Post	P-value
Inpatient utilization			
Any inpatient care	27%	32%	n.s.
Average number inpatient days	3.3	2.4	n.s.
Emergency department utilization			
Any ED visits	65%	44%	n.s.
Average number of ED visits	2.4	1.0	**

** p >0.001 & =< 0.01, n.s. = not significant

Common Conditions in HCR Third Avenue

Severe mental illness. An estimated 68% of clients in the Third Avenue project had at least one SMI diagnosis[56]. In the year prior to MRT-SH enrollment, almost 6% had at least one inpatient stay for a primary diagnosis of SMI, and nearly 9% had at least one ED visit for such a diagnosis. Changes in inpatient and ED care for SMI were minimal. The percent with at least one ED visit dropped to 6% in the year following enrollment, but this was not a statistically significant change.

Substance use disorder. An estimated 53% of the clients in the Third Avenue project had at least one SUD diagnosis. More than one in 10 had at least one inpatient stay for a primary diagnosis of SUD in the year before MRT-SH enrollment, and almost one in five had at least one ED visit. While the percent with an ED visit for an SUD declined following MRT-SH placement, the results were not statistically significant.

Cardiovascular conditions. An estimated 29% of the clients in the Third Avenue project had at least one cardiovascular diagnosis. Despite this prevalence, inpatient and ED use for a primary cardiovascular diagnosis was quite low, with no clients having inpatient stays and fewer than 3% having an ED visit in the year prior to MRT-SH enrollment.

[56] This reflects the percentage of clients with at least one Medicaid claim with a primary diagnosis of an SMI during the 12 months before MRT-SH enrollment. Clients who did not have a claim for an SMI during that period may still have a qualifying diagnosis.

Table 52. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, Third Avenue Clients (n=34)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	6%	6%	n.s.	9%	6%	n.s.
Substance use disorder	12%	12%	n.s.	18%	9%	n.s.
Cardiovascular conditions	0%	0%	n.s.	3%	0%	n.s.

n.s. = not significant

Preventable ED Use

There was a large and statistically significant decrease in the number of ED visits for routine conditions following MRT-SH enrollment.

Following their MRT-SH enrollment, Third Avenue clients had visits to the ED less often for every classification of conditions. The greatest decrease (and the only one that approached statistical significance) was in visits for non-emergent conditions, which dropped from 17 in the pre-period to 7 in the post-period.

Table 53. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, Third Avenue Clients (n=34)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	15	2	-87%	*
NYU Conditions				
Non-emergent	17	7	-59%	†
Emergent, but primary care treatable	11	5	-55%	n.s.
Not primary care treatable, but avoidable	8	4	-50%	n.s.
Alcohol-related	6	4	-33%	n.s.
Drug-related	3	1	-67%	n.s.
Psychiatric-related	4	3	-25%	n.s.
Injury	13	3	-77%	n.s.

* p > 0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not significant

Housing stability

The Third Avenue project is a relatively new project, and there was not sufficient enrollment prior to 2016 to allow a full examination of post-period data.

Retention and Discharge Reasons

Like the HCR Capital Projects overall, the Third Avenue project had a very low rate of attrition. There are not enough cases to analyze.

HCR Capital Projects: Norwood Terrace

- **Program Description:** This is a HCR project supporting 58 units of permanent supportive housing in the Bronx, NY.
- **Population Served:** This program serves chronically homeless single adults who suffer from a serious and persistent mental illness or who are diagnosed as mentally ill and chemically addicted.
- **Earliest MRT-SH Enrollment Date:** August 2016
- **Enrollment:** There were 57 clients enrolled in the HCR Norwood Terrace project between August 2016 and June 2017. Of these, 29 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. None had data from two years post enrollment available.

Overall Inpatient and ED Utilization

The clients in Norwood Terrace had very high rates of inpatient and ED use in the year prior to their MRT-SH enrollment, with 62% having at least one inpatient stay and 86% having at least one ED visit. On average, these clients had 10.6 inpatient days and 6.6 ED visits during the pre-period. In the year following MRT-SH enrollment, however, inpatient use dropped substantially. The percent with at least one inpatient stay fell significantly, to 35%, and the average number of inpatient days dropped significantly to 6.2. The percent with at least one ED visit rose slightly, but the volume of ED visits declined (to an average of 3.2); the latter finding was nearly statistically significant. This program was too new to allow an analysis of 2-year post-period data.

Table 54. Inpatient and Emergency Department Utilization (MDW), Pre- and Post-Enrollment, Norwood Terrace clients (n=29)

	Pre	Post	P-value
Inpatient utilization			
Any inpatient care	62%	35%	*
Average number inpatient days	10.6	6.2	*
Emergency department utilization			
Any ED visits	86%	90%	n.s.
Average number of ED visits	6.6	3.2	†

*p >0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not significant

Common Conditions in Norwood Terrace

Severe Mental Illness. An estimated 86% of the clients in the Norwood Terrace project had at least one diagnosis of an SMI. Almost one in five had at least one inpatient mental health stay, and more than one in five had at least one ED visit for a primary diagnosis of SMI. None of the post-enrollment decreases were statistically significant, however.

Substance Use Disorder. An estimated 72% of clients had at least one SUD diagnosis, and rates of inpatient and ED use for these disorders were high. Use of inpatient and emergency services for SUD decreased after MRT-SH enrollment, but the change was not statistically significant.

Cardiovascular conditions and diabetes. An estimated 55% of clients in the Norwood Terrace project have at least one diagnosed cardiovascular condition, and 31% have diabetes. Very few had inpatient or emergency care for their cardiovascular conditions, however, and none had inpatient or emergency care for their diabetes.

Respiratory conditions. Thirty-one percent also had a diagnosis of COPD and/or asthma, and these conditions were more likely to result in inpatient or emergency care. More than one in ten Norwood Terrace clients had at least one inpatient stay for one of these conditions in the year prior to MRT-SH enrollment. This declined somewhat in the year after, but the change was not statistically significant. The percentage of clients with at least one emergency department visit for these conditions actually increased following MRT-SH enrollment, but this result was not statistically significant either.

Table 55. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, Norwood Terrace Clients (n=29)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	17%	3%	n.s.	21%	7%	n.s.
Substance use disorder	21%	7%	n.s.	24%	17%	n.s.
Cardiovascular conditions	3%	0%	n.s.	0%	3%	n.s.
Diabetes	0%	0%	n.s.	0%	0%	n.s.
Respiratory conditions	10%	7%	n.s.	3%	14%	n.s.

n.s. = not significant

Preventable ED Use

The use of ED services for selected routine complaints decreased from 25 to 16 visits following MRT-SH enrollment, but the change was not statistically significant.

Looking at the NYU classifications, there was a pronounced drop in the number of ED visits for almost every category of potentially preventable visits. Despite the very small number of cases, the reductions in alcohol-related and psychiatric-related ED visits both approached statistical significance.

Table 56. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, Norwood Terrace Clients (n=29)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	25	16	-36%	n.s.
NYU Conditions				
Non-emergent	36	25	-31%	n.s.
Emergent, but primary care treatable	13	14	+8%	n.s.
Not primary care treatable, but avoidable	18	9	-50%	n.s.
Alcohol-related	35	7	-80%	†
Drug-related	10	2	-80%	n.s.
Psychiatric-related	19	5	-74%	†
Injury	13	6	-54%	n.s.

† p >0.05 & < 0.10, n.s. = not significant

Housing stability

The Norwood Terrace project is a relatively new project, and there was not sufficient enrollment prior to 2016 to allow a full examination of post-period data.

Retention and Discharge Reasons

Like the HCR Capital Projects overall, the Norwood Terrace project had a very low rate of attrition. There are not enough cases to analyze.

VOA Creston

- **Program Description:** This is an HCR project supporting 21 units of permanent supportive housing in the Bronx, NY.
- **Population Served:** This program serves chronically homeless single adults who suffer from a serious and persistent mental illness or who are diagnosed as mentally ill and chemically addicted.
- **Earliest MRT-SH Enrollment Date:** December 2014
- **Enrollment:** There have been 22 clients enrolled in the VOA Creston project to date. Nineteen met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. Because of the small number of participants, only an abbreviated set of measures are analyzed for this program. Due to the small sample size, p-values are not presented here.

Overall Inpatient and ED Utilization

The clients in VOA Creston had moderately high rates of inpatient and very high rates of ED use in the year prior to their MRT-SH enrollment, with 26% having at least one inpatient stay and 84% having at least one ED visit. On average, these clients had 3.0 inpatient days and 3.9 ED visits during the pre-period. In the year following MRT-SH enrollment, however, the percentage with inpatient use decreased, while the average number of inpatient days increased. The percent with at least one ED visit dropped, as did the volume of ED visits.

Table 57. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, VOA Creston Clients (n=19)

	Pre	Post
Inpatient utilization		
Any inpatient care	26%	21%
Average number inpatient days	3.0	3.7
Emergency department utilization		
Any ED visits	84%	68%
Average number of ED visits	3.9	2.0

Key Findings for HCR projects

- Clients in the East 99th capital project experienced significant reductions in ED visits for emergent but PC treatable conditions and in shelter use
- Clients in the HCR behavioral health projects overall experienced significant reductions in:
  - The average number of ED visits overall
  - The likelihood of ED visits for SUD
  - ED visits for routine complaints, non-emergent conditions, avoidable conditions, injuries, and drug- and alcohol-related conditions.
  - Shelter use
- Clients in the Boston Road capital project experienced a decrease in the average number of ED visits for injuries
- Clients in the Third Avenue capital project experienced a decrease in the average number of ED visits overall, and ED visits for routine conditions
- Clients in the Norwood Terrace capital project experienced a decrease in the percent of clients with any inpatient care and the average number of inpatient days.

OTDA PROGRAMS

Eviction Prevention for Vulnerable Adults (EPVA)

- **Program Description:** The program provides rental subsidies for elderly or disabled individuals who are at risk of eviction. It was created to maintain the housing of formerly homeless recipients of New York City's Advantage Rental Subsidy program when the Advantage program ended. Most recipients were already housed during the pre-period; the program's goal was to prevent a return to homelessness.
- **Population Served:** Recipients of SSI or Social Security retirement or disability benefits who are part of a household with no other employable adults, and are at risk of homelessness.
- **Earliest MRT-SH Enrollment Date:** August 2013
- **Enrollment:** There were 282 clients enrolled in the program between August 2013 and May 2017; 213 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. Of these, 188 had data from two years post enrollment available.

Overall utilization of inpatient and emergency services (MDW)

EPVA clients were relatively high users of inpatient and ED services, with nearly one-quarter having at least one inpatient stay and more than half having at least one ED visit in the year prior to MRT-SH enrollment. Use of inpatient care did not change significantly in the 12 months post-enrollment, but the percentage with at least one ED visit decreased significantly, and the average number of ED visits also decreased but did not quite reach the level of statistical significance.

When clients with continuous Medicaid coverage for 2 years post-enrollment are analyzed, there is a significant difference between the percentage with at least one ED visit in the pre-period and both the first year (Y1) and second year (Y2) post-periods. Further, the decrease in the average number of ED visits continues into Y2, and the difference between the pre-period and Y2 approaches statistical significance.

Table 58. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, EPVA Clients

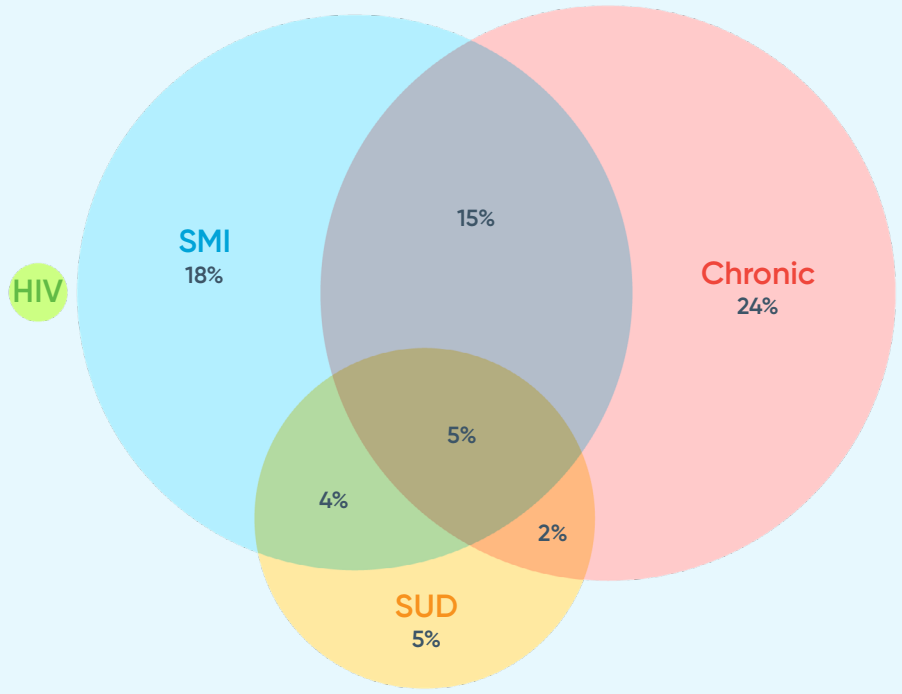
				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=213)	24%	23%	--	n.s.	--	--
Two year post-enrollment sample (n=188)	22%	20%	19%	n.s.	n.s.	n.s.
Average number inpatient days						
Full sample (all)	3.1	2.3	--	n.s.	--	--
Two year post-enrollment sample (n=188)	2.9	2.0	3.4	n.s.	n.s.	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	52%	41%	--	**	--	--
Two year post-enrollment sample (n=188)	51%	42%	41%	*	*	n.s.
Average number of ED visits						
Full sample (all)	1.6	1.4	--	†	--	--
Two year post-enrollment sample (n=188)	1.4	1.2	1.1	n.s.	†	n.s.

** p > 0.001 & =< 0.01, *p >0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not significant

Common conditions in EPVA

Twenty-seven percent of clients (not shown) in EPVA had no identified chronic conditions. Another 24% had chronic medical conditions only, exclusive of behavioral health diagnoses or HIV; and 18% had a severe mental illness without other comorbidities. The most common combination of conditions was a chronic medical condition and an SMI (15%)

Figure 7. Overlap Between Types of Chronic Conditions among EPVA Project Clients



Note: Not shown are those with no pre-period claims for the selected conditions (26%).

Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

Severe mental illness. An estimated 42% of EPVA clients had at least one diagnosis of an SMI. Despite this high rate, the use of inpatient and ED care for SMI were quite low and none of the changes were statistically significant.

Table 59. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, EPVA Clients (n=213)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	2%	1%	n.s.	2%	2%	n.s.

*** p =<0.001, n.s. = not significant

Preventable ED use

ED visits for the selected routine conditions decreased significantly following MRT-SH enrollment.

ED visits for non-emergent conditions dropped significantly, even as there was a slight but statistically insignificant increase in conditions that were emergent but primary care treatable or avoidable. This population experienced few alcohol-, drug-, or psychiatric-related ED visits, but the number of ED visits for injuries decreased (although not statistically significantly).

Table 60. Total Number Potentially Avoidable ED Visits, Pre- and Post-Enrollment, EPVA Clients (n=213)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	74	50	-32%	*
NYU Conditions				
Non-emergent	88	61	-31%	*
Emergent, but primary care treatable	45	47	+4%	n.s.
Not primary care treatable, but avoidable	27	31	+15%	n.s.
Alcohol-related	6	3	-50%	n.s.
Drug-related	3	1	-67%	n.s.
Psychiatric-related	7	11	+57%	n.s.
Injury	33	25	-24%	n.s.

*p >0.01 & =< 0.05, n.s. = not significant

Housing stability

There was a statistically significant drop in the percentage of EPVA clients who had any shelter use in the pre-period versus the Year 1 post period. When clients with Year 2 data available were examined the results were similar. However, the number increased slightly in the Year 2 period, although this was still significantly lower than the pre-period and not significantly different from Year 1.

Table 61. Documented shelter use among EPVA Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Year 1 Post (n=209)	57%	1%	--	***	--	--
Pre vs. Year 2 Post (n=187)	58%	1%	2%	***	***	n.s.

*** p <= 0.001, ** p > 0.001 & =< 0.01, n.s. = not significant

Retention and Reasons for Discharge

Retention in EPVA was extremely high, with 98% of clients being retained at 6 months and 94% at a year. Even two and three years after enrollment, retention rates were 84% and 79%, respectively.

No data were available about reason for discharge.

Table 62. Retention rate of EPVA clients by months since enrollment

% Retained at:	
6 months	98%
1 year	94%
18 months	89%
2 years	84%
3 years	79%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those whose data was pulled while still enrolled who had not yet reached that amount of time were excluded from the denominator).

Homeless Housing Assistance Program (HHAP) Capital Projects

The HHAP capital projects consist of several small projects, most of which do not meet the threshold for inclusion of at least 25 clients.

Program Descriptions:

- Opportunities for Broome's 86 Carroll St. is a capital project supporting 22 units of permanent SH in Binghamton, NY.
- Providence Housing Development's Son House is a capital project supporting 21 units of permanent SH in Rochester, NY.
- Finger Lakes United Cerebral Palsy's Happiness House is a capital project supporting a 20-unit building in Geneva, NY (Ontario County) which includes 7 MRT units.
- The Polish Community Center's Hope Gardens is a capital project supporting 20 units of permanent SH in Buffalo, NY.
- Evergreen Loft Apartments is a capital project supporting 28 units of permanent SH in Buffalo, NY.

Populations Served:

- Opportunities for Broome serves chronically homeless single adults who are recovering from drug and/or alcohol abuse or have a mental illness or other disability.
- Providence Housing Development's Son House serves chronically homeless single adults who have a documented disability.
- Finger Lakes United Cerebral Palsy's Happiness House serves single individuals with developmental disabilities, physical disabilities, or traumatic brain injury who would otherwise be homeless or placed in a nursing home.
- The Polish Community Center's Hope Gardens serves chronically homeless single women with special needs such as mental illness, drug and alcohol abuse, or a history of domestic violence or physical or sexual assault.
- Evergreen Loft Apartments serves homeless adults who are living with HIV/AIDS, have a disabling health condition, and/or are physically disabled.

Earliest MRT-SH Enrollment Dates:

- Opportunities for Broome's 86 Carroll St. – December 2014
- Providence Housing Development's Son House – December 2013
- Finger Lakes United Cerebral Palsy's Happiness House – September 2014
- The Polish Community Center's Hope Gardens – December 2015
- Evergreen Loft Apartments – August 2016

Enrollment: There were 138 clients enrolled in the Homeless Housing Assistance Program (HHAP) between December 2013 and May 2017. Of these, 86 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment; 49 had data from two years post enrollment available.

Overall utilization of inpatient and emergency services

When the full sample is analyzed, there are significant reductions in all four measures of inpatient and emergency department use between the pre-period and the 1-year post-period. When clients with continuous Medicaid coverage for two years post-enrollment are analyzed, these results hold for the percentage with any inpatient care and the average number of ED visits. There is a trend towards utilization rising again in the 2nd year post-enrollment (Y2), following the drop in Year 1, although Year 2 values remain below pre-period levels except for percent with any inpatient care. Despite these modest increases in the second post-enrollment year, the Y2 measures only differ significantly from the Y1 measures for percent with any inpatient care.

Table 63. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, HHAP Clients

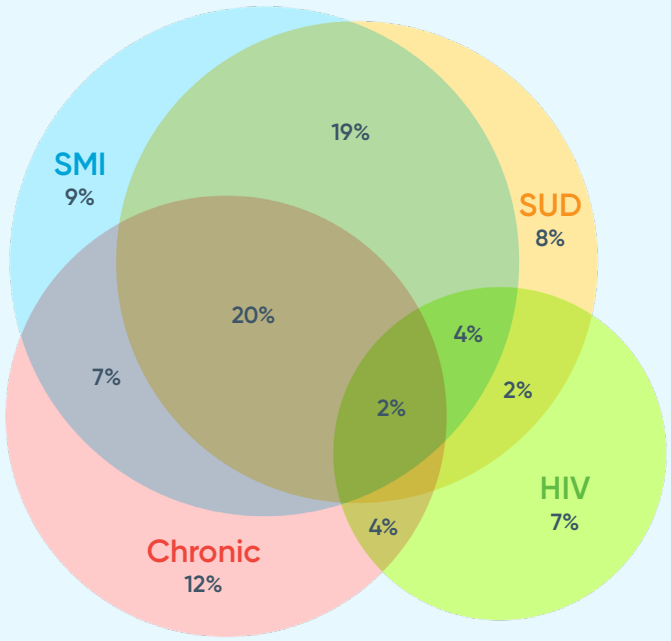
				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=86)	34%	17%	--	**	--	--
Two year post-enrollment sample (n=49)	33%	16%	39%	*	--	*
Average number inpatient days						
Full sample (all)	4.5	2.2	--	**	--	--
Two year post-enrollment sample (n=49)	5.2	2.4	3.7	0.061	n.s.	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	65%	49%	--	*	--	--
Two year post-enrollment sample (n=49)	65%	51%	57%	n.s.	n.s.	n.s.
Average number of ED visits						
Full sample (all)	2.8	2.0	--	***	--	--
Two year post-enrollment sample (n=49)	3.5	2.6	3.4	*	n.s.	n.s.

*** p <= 0.001, ** p > 0.001 & =< 0.01, *p >0.01 & =< 0.05, n.s. = not significant

Common conditions in HHAP

Sixteen percent of clients (not shown) in HHAP did not have an identified chronic condition. Twenty percent had a chronic medical condition, an SMI, and an SUD. Nineteen percent had an SMI and an SUD together, while 12% had a chronic medical condition alone. Twenty-three percent had HIV.

Figure 8. Overlap Between Types of Chronic Conditions among HHAP clients



Note: Not shown are those with no identified conditions (16%).

Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

Severe mental illness. An estimated 55% of HHAP clients were diagnosed with at least one SMI. Despite this high rate, these clients were not particularly high users of inpatient and emergency care for SMI. While the percentage of clients with at least one inpatient stay or at least one ED visit for SMI both decreased, the changes were not statistically significant.

Substance use disorder. An estimated 49% of HHAP clients have at least one diagnosed SUD. Use of inpatient and ED services for a primary diagnosis of SUD was slightly higher than for SMI. While the percentage of clients with at least one inpatient stay or at least one ED visit both decreased slightly, the changes were not statistically significant.

Table 64. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, HHAP Clients (n=86)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	11%	5%	n.s.	7%	5%	n.s.
Substance use disorder	14%	8%	n.s.	11%	6%	n.s.

*** p =<0.001, n.s. = not significant

Preventable Emergency Department Use

The number of ED visits for selected routine complaints decreased by 51% between the pre-period and 12-month post-period, which was a statistically significant drop.

There was also a decrease in most other classifications of potentially avoidable ED visits, particularly for conditions that were emergent but primary care treatable.

Table 65. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, HHAP Clients (n=86)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	59	29	-51%	*
NYU Conditions				
Non-emergent	59	46	-22%	n.s.
Emergent, but primary care treatable	39	12	-69%	***
Not primary care treatable, but avoidable	4	8	+100%	n.s.
Alcohol-related	14	27	+93%	n.s.
Drug-related	6	3	-50%	n.s.
Psychiatric-related	12	8	-33%	n.s.
Injury	41	24	-41%	n.s.

***p <=0.001, n.s. = not significant

Housing stability

The HHAP projects fell outside the geographic areas for which shelter data were available for this project; therefore housing stability could not be analyzed.

Retention and Reasons for Discharge

Retention in the HHAP capital projects was quite high, with 91% of clients remaining enrolled after 1 year, two-thirds remaining after two years, and more than half still remaining after 3 years. HHAP clients had been enrolled for a median of 15.8 months at discharge. No data were available about reason for discharge.

Table 66. Retention rate of HHAP clients by months since enrollment (n=86)

% Retained at:	
6 months	95%
1 year	91%
18 months	84%
2 years	66%
3 years	55%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those whose data was pulled while still enrolled who had not yet reached that amount of time were excluded from the denominator).

Homeless Senior and Disabled Placement Pilot

- Program Description: The Homeless Senior and Disabled Placement Pilot provides rental subsidies for Health Home-eligible SSI recipients living in New York City homeless shelters.
- Population Served: Participants are Health Home-eligible SSI recipients living in New York City homeless shelters.
- Earliest MRT-SH Enrollment Date: May 2014
- Enrollment: There were 234 clients enrolled in the Homeless Senior and Disabled Placement Pilot program between May 2014 and June 2017. Of these, 199 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment; 65 had data available from two years post enrollment.

Overall utilization of inpatient and emergency services (MDW)

The likelihood of inpatient care increases somewhat between the pre- and post-period for these clients, as does the average number of inpatient days. The percentage with at least one ED visit decreases, but the average number of ED visits does not appreciably change. None of these results are statistically significant.

When those clients with 2-year data are examined, there is a similar pattern between the pre- and Year 1 (Y1) post-periods. Notably, however, the percentage with at least one ED visit continues to decrease in the Year 2 (Y2), and is significantly different than the pre-period percentage.

Table 67. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, Homeless Senior and Disabled Pilot Clients

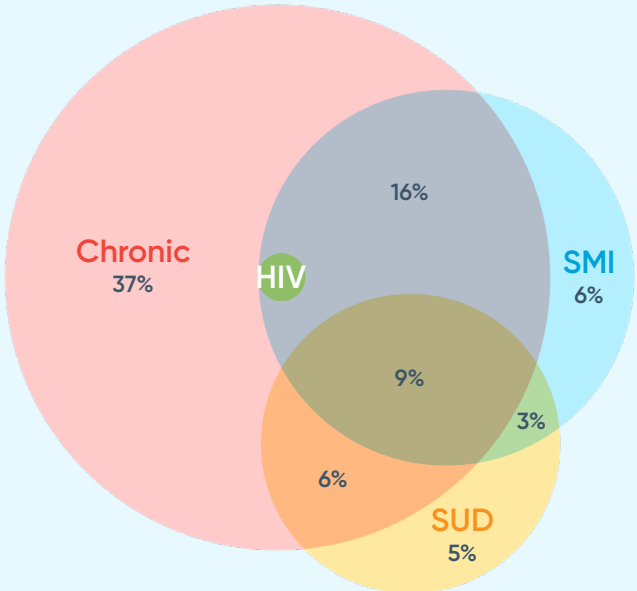
				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=199)	23%	27%	--	n.s.	--	--
Two year post-enrollment sample (n=65)	31%	31%	34%	n.s.	n.s.	n.s.
Average number inpatient days						
Full sample (all)	2.2	2.9	--	n.s.	--	--
Two year post-enrollment sample (n=65)	2.9	3.7	4.0	n.s.	n.s.	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	42%	36%	--	n.s.	--	--
Two year post-enrollment sample (n=65)	45%	34%	29%	n.s.	*	n.s.
Average number of ED visits						
Full sample (all)	1.1	1.0	--	n.s.	--	--
Two year post-enrollment sample (n=65)	1.1	1.0	1.1	n.s.	n.s.	n.s.

*p >0.01 & =< 0.05, n.s. = not significant

Common conditions in Homeless Senior and Disabled Placement Pilot

This program was more focused on chronic medical conditions than other programs, with 67% of clients having at least one chronic medical condition alone or in combination with another condition, and 22% of clients (not shown) having none of the identified conditions. The most common combination was a chronic medical condition alone (37%) or in combination with a severe mental illness (16%).

Figure 9. Overlap Between Types of Chronic Conditions among Homeless Senior Pilot Clients



Note: Not shown are those with no identified conditions (22%).

Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

Severe mental illness. An estimated 32% of the clients in this program had at least one diagnosed SMI. Nonetheless, the use of inpatient and emergency care was quite low and did not appreciably change.

Cardiovascular conditions. An estimated 41% of the clients had at least one diagnosed cardiovascular condition. The percentage with at least one inpatient stay for a cardiovascular condition increased slightly, while the percentage with at least one ED visit for a cardiovascular condition decreased slightly, but both numbers were small and the pre-post differences were not statistically significant.

Diabetes. An estimated 30% of the clients in this program had a diagnosis of diabetes. The percentage with at least one inpatient stay for a primary diagnosis of diabetes increased slightly, while the percentage with at least one ED visit for primary diagnosis of diabetes decreased slightly, but both numbers were small and the pre-post differences were not statistically significant.

Table 68. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, Homeless Senior and Disabled Pilot Clients (n=199)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	2%	2%	n.s.	1%	2%	n.s.
Cardiovascular conditions	4%	4%	n.s.	2%	2%	n.s.
Diabetes	0%	4%	n.s.	2%	1%	n.s.

n.s. = not significant

Preventable ED Visits

ED visits for selected routine conditions decreased by 41% between the pre- and post-enrollment periods, which is a statistically significant finding. The patterns found for other classifications of ED visits varied, and none were statistically significant.

Table 69. Potentially Avoidable ED Visits, Pre- and Post-Enrollment, Homeless Senior and Disabled Pilot Clients (n=199)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	54	32	-41%	*
NYU Conditions				
Non-emergent	51	49	-4%	n.s.
Emergent, but primary care treatable	48	35	-27%	n.s.
Not primary care treatable, but avoidable	25	17	-32%	n.s.
Alcohol-related	3	4	+33%	n.s.
Drug-related	0	1	--	n.s.
Psychiatric-related	3	12	+400%	n.s.
Injury	22	30	+36%	n.s.

n.s. = not significant

Housing stability

There was a significant drop in shelter use among these clients between the pre- and Year 1 post-periods. For those clients with Year 2 data available, shelter use remained the same in Y2.

Table 70. Documented shelter use among Homeless Senior and Disabled Pilot Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=94)	26%	7%	--	**	--	--
Pre vs. Y1 & Y2 Post (n=65)	28%	11%	11%	*	*	n.s.

** p > 0.001 & =< 0.01, *p >0.01 & =< 0.05, n.s. = not significant

Retention and reasons for discharge

The Senior and Disabled Housing Pilot had a strong rate of retention, with no clients lost in the first 6 months of the program and 83% still enrolled after a year. Nearly three-quarters were still enrolled after 2 years, but the program is too new to calculate a 3-year retention rate. The average duration of enrollment at discharge is 12.9 months for these clients. No information is available on reasons for discharge.

Table 71. Retention rate of Homeless Senior and Disabled Pilot Clients by Months since Enrollment

% Retained at:	
6 months	100%
1 year	83%
18 months	83%
2 years	72%

Key Findings for OTDA programs:

Clients in EPVA experienced:

- A reduction in the percentage with at least one ED visit
- A reduction in ED visits for routine and non-emergent conditions
- A reduction in shelter use

Clients in the HHAP capital projects experienced:

- A reduction in the percent with any inpatient and ED use and in the average number of inpatient days and ED visits overall
- A reduction in ED visits for routine complaints and emergent but PC treatable conditions

Clients in the Homeless Senior and Disabled Placement Pilot experienced:

- A reduction in the percent with any ED use, but only in the second year post-enrollment
- A reduction in ED visits for routine complaints
- A reduction in shelter use

OMH PROGRAMS

Rental Subsidies – Brooklyn (RSB)

There were 468 clients enrolled in the OMH Rental Subsidies – Brooklyn (RSB) program between March 2013 and September 2017. Of these, 336 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment.

Overall utilization of inpatient and emergency services (MDW)

The percentage of RSB clients with at least one inpatient stay increased slightly following MRT-SH enrollment (falling just short of statistical significance at p=0.057), but the average number of inpatient days decreased significantly from 7.8 to 5. The percentage of clients with at least one ED visit decreased, as did the average number of ED visits, but only the latter finding was statistically significant.

Among the subset of clients with a second year of post-period data, there is a nonsignificant decrease in the percentage with at least one inpatient stay between the pre-period and the first and second year post-periods (Y1 and Y2). The percentage for Y1 and Y2 are very similar, indicating that this decrease relative to the pre-period, while not significant, is persistent. The average number of inpatient days decreases in Y1 (not quite significantly different from the pre-period), but starts to increase again in Y2. The percentage with at least one ED visit decreases nonsignificantly from the pre-period to Y1 and decreases further in Y2, with the pre-period versus Y2 difference being nearly significant. There is a significant difference between the average number of ED visits for the pre-period versus Y1 that persists through Y2.

Table 72. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, RSB Clients

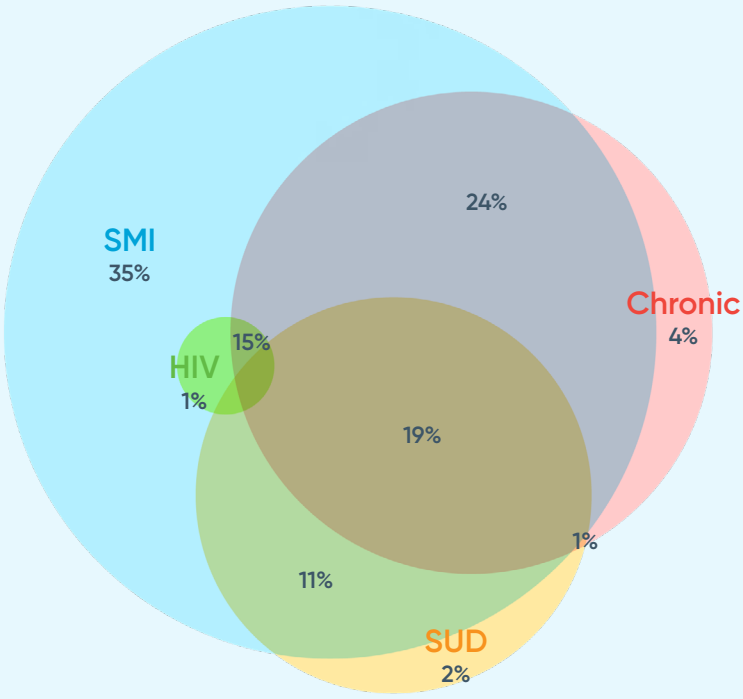
				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=336)	32%	36%	--	†	--	--
Two year post-enrollment sample (n=292)	31%	27%	26%	n.s.	n.s.	n.s.
Average number inpatient days						
Full sample (all)	7.8	5.0	--	*	--	--
Two year post-enrollment sample (n=292)	7.6	4.9	6.3	†	n.s.	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	54%	49%	--	n.s.	--	--
Two year post-enrollment sample (n=292)	53%	50%	47%	n.s.	†	n.s.
Average number of ED visits						
Full sample (all)	2.0	1.5	--	**	--	--
Two year post-enrollment sample (n=292)	2.0	1.6	1.6	**	*	n.s.

** p > 0.001 & =< 0.01, *p >0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not significant

Utilization for common conditions

All clients in the RSB program have been diagnosed with a severe mental illness. The most common combination of diagnoses among these clients was SMI alone (38%), followed by SMI and at least one chronic medical condition (29%). More than one in five clients (21%) had an SMI, an SUD, and a chronic medical condition.

Figure 10. Overlap Between Types of Chronic Conditions among RSB Clients (n=336)



Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

Severe mental illness. Despite the RSB clients being universally diagnosed with a severe mental illness prior to the MRT-SH enrollment, their use of inpatient and ED care for SMI different little from the MRT-SH participants overall. Thirteen percent had at least one inpatient stay for SMI, and 12% had at least one ED visit. Changes in inpatient and ED services for SMI between the pre- and post-enrollment period were minimal and not statistically significant.

Substance use disorder. An estimated 33% of clients in RSB had at least one diagnosis of an SUD. More than 8% had experienced at least one inpatient stay for an SUD in the year before MRT-SH enrollment, and 6% had experienced at least one ED visit. Both numbers declined slightly following MRT-SH enrollment, but not significantly.

Table 73. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, RSB Clients (n=336)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	13%	10%	n.s.	12%	10%	n.s.
Substance use disorder	8%	7%	n.s.	6%	5%	n.s.

n.s. = not significant

Preventable ED use

ED visits for routine conditions decreased following MRT-SH enrollment, but the change was modest and not statistically significant. Other classifications of ED visits decreased, but these changes were also generally not statistically significant. The exception was visits for conditions that were emergent but primary care treatable, which decreased 44%. The decrease in psychiatric-related conditions fell just short of statistical significance with p=0.058.

Table 74. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, RSB Clients (n=336)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	119	108	-7%	n.s.
NYU Conditions				
Non-emergent	149	125	-16%	n.s.
Emergent, but primary care treatable	114	64	-44%	**
Not primary care treatable, but avoidable	34	29	-15%	n.s.
Alcohol-related	22	20	-9%	n.s.
Drug-related	14	10	-29%	n.s.
Psychiatric-related	89	67	-25%	†
Injury	76	74	-3%	n.s.

** p > 0.001 & =< 0.01, † p >0.05 & < 0.10, n.s. = not significant

Housing Stability

There is a sharp and statistically significant drop in shelter use between the pre-period and Y1 post-period. In the Y2 post-period there is a slight increase, with shelter use significantly lower than the pre-period but significantly higher than in Y1.

Table 75. Documented shelter use among RSB Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=319)	34%	3%	--	***	--	--
Pre vs. Y1 & Y2 Post (n=292)	34%	2%	6%	***	***	**

*** p =< 0.001, ** p > 0.001 & =< 0.01

Retention and reasons for discharge

RSB clients had a very high retention rate. More than 90% were still enrolled after a year, and nearly three-quarters were still enrolled after three years. The median duration of enrollment at discharge was 18.2 months.

Table 76. Retention rate of RSB clients by months since enrollment (n=336)

% Retained at:	
6 months	96%
1 year	92%
18 months	87%
2 years	82%
3 years	73%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those still enrolled who had not yet reached that amount of time were excluded from the denominator).

OMH programs record clients' post-discharge living situation rather than reason for discharge. Of the clients who were discharged, more than one-quarter were able to move into a private residence. Nearly 28% moved into a voluntary operated mental health residential treatment facility (a higher level of care). Nine percent moved into a homeless shelter. Still, the number of clients discharged at all was remarkably low for such a complex population.

Table 77. Post-discharge living situation, RSB clients (n=90)

Private residence	26%
Incarcerated	0%
Voluntary operated MH residential treatment	28%
Hospitalized	3%
Residential substance abuse treatment	2%
Went into homeless shelter	9%
All other reasons	32%

Rental Subsidies – Statewide (RSS)

There were 749 clients enrolled in the OMH Rental Subsidies – Statewide (RSS) program between January 2013 and October 2017. Of these, 467 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment.

Overall utilization of inpatient and emergency services (MDW)

Nearly half of the clients in RSS had at least one inpatient stay in the 12 months prior to their MRT-SH enrollment, and more than two-thirds had at least one ED visit. In the 12 months following MRT-SH enrollment, the percentage with at least one inpatient stay decreased significantly, as did the average number of inpatient days and the average number of ED visits. The percentage with at least one ED visit also declined, but did not quite meet the threshold for statistical significance (p=0.055).

When clients with at least two years of continuous Medicaid enrollment are considered, the results for the pre-period versus the Year 1 post-period (Y1) persist. Furthermore, utilization remains significantly lower during the Year 2 post-period (Y2) compared to the pre-period. Inpatient utilization becomes even lower than during the Y1 post-period (although not significantly so), while ED use remains very similar to the Y1 post-period.

Table 78. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, RSS Clients

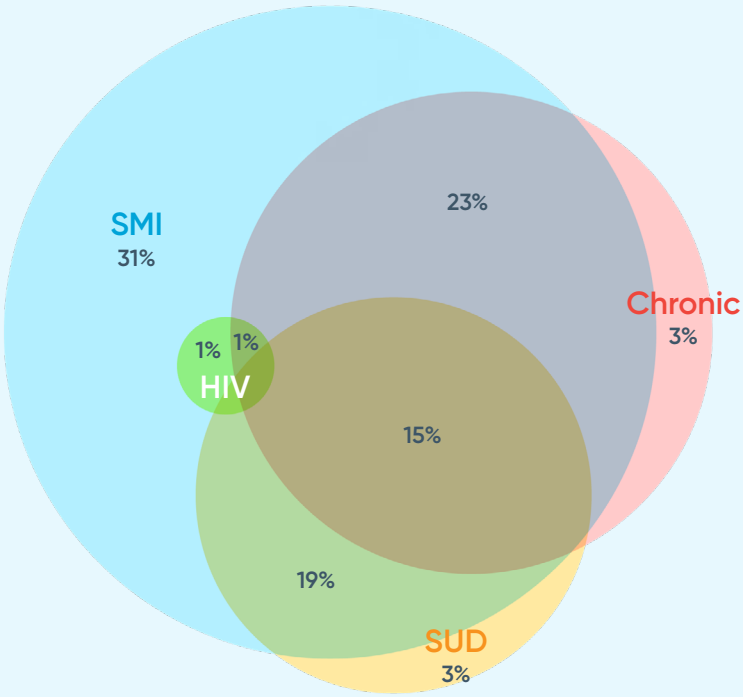
				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=467)	47%	38%	--	***	--	--
Two year post-enrollment sample (n=362)	49%	38%	33%	***	***	n.s.
Average number inpatient days						
Full sample (all)	13.1	6.6	--	***	--	--
Two year post-enrollment sample (n=362)	12.7	7.0	6.5	***	***	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	68%	63%	--	†	--	--
Two year post-enrollment sample (n=362)	70%	62%	62%	**	**	n.s.
Average number of ED visits						
Full sample (all)	4.1	3.1	--	***	--	--
Two year post-enrollment sample (n=362)	4.1	3.1	3.3	***	*	n.s.

*** p =<0.001, ** p > 0.001 & =< 0.01, *p >0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not significant

Utilization for common conditions

All of these clients had a diagnosis of a severe mental illness before enrolling in the MRT-SH program. The most common combination of diagnoses among these clients was SMI alone (34%), followed by SMI and at least one chronic medical condition (27%). Twenty-two percent had an SMI and an SUD together, and 16% had all three types of conditions.

Figure 11. Overlap Between Types of Chronic Conditions among RSS Clients (n=467)



Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

Severe mental illness. Subsequently, these clients were high utilizers of inpatient and ED care for SMI. More than one-quarter had experienced at least one inpatient stay for SMI in the year prior to MRT-SH enrollment, and almost as many had experienced at least one ED visit for SMI. These numbers significantly decreased in the 12 months following MRT-SH enrollment.

Substance use disorder. An estimated 39% of RSS clients have at least one diagnosis of an SUD. More than 10% had at least one inpatient stay and the same percentage had at least one ED visit for a primary diagnosis of SUD. The percentage with an inpatient stay decreased significantly in the 12 months following enrollment.

Table 79. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, RSS Clients (n=467)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	28%	19%	***	23%	15%	***
Substance use disorder	11%	7%	*	10%	11%	n.s.

*** p =<0.001, n.s. = not significant

Preventable ED use

ED visits for the selected routine complaints decreased by 27%, which was a statistically significant change. There was a significant decrease in ED visits for non-emergent conditions among these clients, as well as significant decreases in psychiatric-related and injury-related ED visits.

Table 80. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, RSS Clients (n=467)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	444	322	-27%	*
NYU Conditions				
Non-emergent	429	271	-37%	**
Emergent, but primary care treatable	274	260	-5%	n.s.
Not primary care treatable, but avoidable	77	54	-30%	n.s.
Alcohol-related	52	47	-10%	n.s.
Drug-related	54	42	-22%	n.s.
Psychiatric-related	334	203	-39%	***
Injury	254	176	-31%	**

*** p =<0.001, ** p > 0.001 & =< 0.01, n.s. = not significant

Housing stability

There is a statistically significant reduction in shelter use between the pre-period and the Year 1 post-period. The same pattern is found among those with 2-year post-period data. There is a slight increase in the Y2 post-period, but it remains significantly different from the pre-period and is not significantly different from the Y1 post-period.

Table 81. Documented shelter use among OMH RSS Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=242)	20%	3%	--	***	--	--
Pre vs. Y2 Post (n=218)	21%	3%	4%	***	***	n.s.

*** p =<0.001, , n.s. = not significant

Retention and reasons for discharge

A little more than two-thirds of RSS clients stayed enrolled in the program for at least a year, with 50% staying enrolled for at least two years. The median duration of enrollment at discharge was 10.4 months.

Discharge often reflected positive developments in a client's life, with more than half moving into a private residence and very few becoming homeless according to program data. Eight percent, however, were moved into a voluntary operated residential treatment program.

Table 82. Retention rate of RSS clients by months since enrollment (n=467)

% Retained at:	
6 months	81%
1 year	68%
18 months	60%
2 years	50%
3 years	38%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those still enrolled who had not yet reached that amount of time were excluded from the denominator).

Table 83. Post-discharge living situation of RSS Clients (n=273)

Private residence	55.6%
Incarcerated	2.6%
Voluntary operated MH residential treatment	8.0%
Hospitalized	3.3%
Residential substance abuse treatment	2.6%
Went into homeless shelter	2.6%
All other reasons	24.9%

Key Findings for OMH Programs:

Clients in RSB experienced:

- A reduction in the average number of inpatient days and ED visits overall
- A reduction in ED visits for emergent but PC treatable conditions
- A reduction in shelter use

Clients in RSS experienced:

- A reduction in the percent with any inpatient or ED and in the average number of inpatient days and ED visits (the latter only statistically significant among those with at least two years of post-enrollment data)
- A reduction in the percent with any inpatient and ED use for SMI
- A reduction in the percent with inpatient care for SUD
- A reduction in ED visits for routine complaints, non-emergent conditions, and injuries, and in psychiatric-related ED visits
- A reduction in shelter use

OASAS PROGRAMS

There were 678 clients enrolled in the OASAS Rental Subsidies (OASAS-RS) program between April 2013 and August 2017. Of these, 442 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment.

Overall utilization of inpatient and emergency services

The OASAS-RS clients were extremely high utilizers of both inpatient and emergency care, which was not surprising given that this program had eligibility requirements based on utilization which were clearly outlined. Nearly 80% had at least one inpatient stay in the year before MRT-SH enrollment, with an average of 27.2 inpatient days. An even higher percentage (85%) had at least one ED visit during the same period, with an average of 5.3 visits. All of these measures declined significantly, however, in the 12 months following MRT-SH enrollment. The percentage using inpatient care dropped to 52%, and the average number of inpatient days decreased by more than half. The decrease in ED care was not as dramatic but still substantial and statistically significant.

The positive trend continues for those clients with Year 2 (Y2) post-period data available. Not only do Y2 post-period numbers remain significantly lower than pre-period numbers, but in most cases are significantly or almost significantly lower than Y1 post-period numbers (the exception being the percentage with at least one ED visit, which is not significantly different between the Y1 and Y2 post-periods).

Table 84. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, OASAS-RS Clients

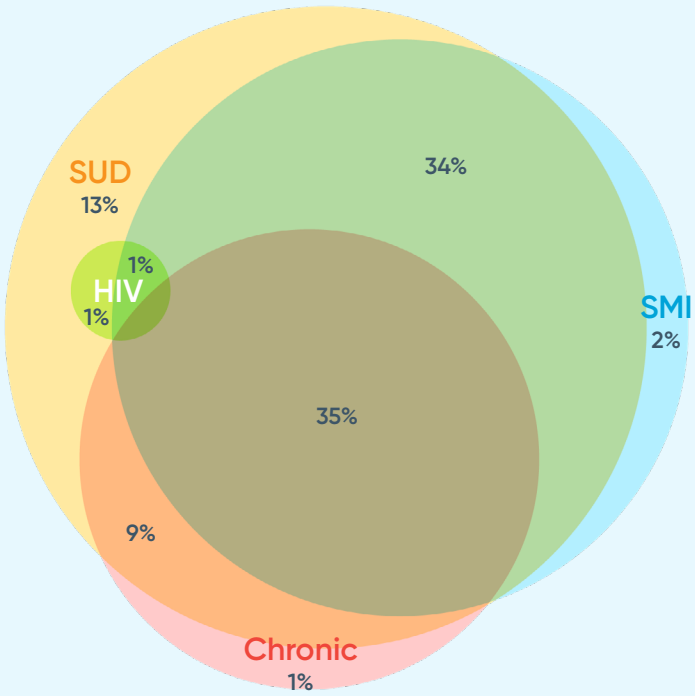
				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=442)	79%	52%	--	***	--	--
Two year post-enrollment sample (n=313)	78%	54%	47%	***	***	*
Average number inpatient days						
Full sample (all)	27.2	12.8	--	***	--	--
Two year post-enrollment sample (n=313)	24.6	13.6	10.9	***	***	*
Emergency department utilization						
Any ED visits						
Full sample (all)	85%	73%	--	***	--	--
Two year post-enrollment sample (n=313)	85%	74%	69%	***	***	n.s.
Average number of ED visits						
Full sample (all)	5.3	3.5	--	***	--	--
Two year post-enrollment sample (n=313)	5.5	3.8	3.5	***	***	†

*** p =<0.001, * p > 0.01 & =< 0.05, † p >0.05 & < 0.10, n.s. = not significant

Utilization for common conditions

All of the OASAS-RS clients have a history of an SUD. Thirty-eight percent of OASAS-RS clients have not only an SUD but also an SMI and a chronic medical condition. Another 37% have an SUD in combination with an SMI. Only 14% have an SUD without any identified comorbidities.

Figure 12. Overlap Between Types of Chronic Conditions among OASAS-RS Clients



Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

Substance use disorder. Well over half (58%) had at least one inpatient stay with a primary diagnosis of SUD in the year prior to MRT-SH enrollment, and almost one-third had at least one ED visit. Both measures decreased significantly following MRT-SH enrollment.

Severe mental illness. An estimated 76% of the OASAS-RS clients also had a diagnosis of at least one SMI. Use of inpatient and emergency services for SMI were correspondingly high, with more than one in five experiencing at least one inpatient stay for SMI and nearly one in four experiencing at least one ED visit in the year prior to MRT-SH enrollment. Both measures decreased significantly in the post-period.

Table 85. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, OASAS-RS Clients (n=442)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Substance use disorder	58%	34%	***	30%	21%	***
Severe mental illness	21%	12%	***	23%	14%	***

*** p =<0.001

Preventable ED visits

ED visits for the selected routine complaints studied decreased substantially and significantly following MRT-SH enrollment. Other classifications of ED visits decreased significantly as well. Drug-related ED visits registered the largest decrease (-60%), and visits for avoidable conditions decreased by half. The only decrease that was not statistically significant was that for injury-related visits.

Table 86. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, OASAS-RS Clients (n=442)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	482	291	-40%	***
NYU Conditions				
Non-emergent	417	252	-40%	***
Emergent, but primary care treatable	358	228	-36%	***
Not primary care treatable, but avoidable	117	58	-50%	***
Alcohol-related	320	253	-21%	***
Drug-related	103	41	-60%	***
Psychiatric-related	212	126	-41%	***
Injury	228	183	-20%	n.s.

*** p =<0.001, n.s. = not significant

Housing stability

There is a statistically significant reduction in shelter use between the pre-period and the Y1 post-period. Among those with Y2 data, a significant decrease is maintained into Y2 relative to the pre-period, although Y2 is significantly higher than Y1.

Table 87. Documented shelter use among OASAS-RS Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=239)	39%	3%	--	***	--	--
Pre vs. Y1 & Y2 Post (n=190)	40%	3%	7%	***	***	*

*** p =<0.001, , n.s. = not significant

Retention and reasons for discharge

Two-thirds of OASAS clients stayed enrolled in the program for at least a year, with nearly half staying enrolled for at least two years. The median duration of enrollment at discharge was 10.4 months.

Table 88. Retention rate of OASAS-RS clients by months since enrollment (n=442)

% Retained at:	
6 months	85%
1 year	66%
18 months	55%
2 years	48%
3 years	35%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those still enrolled who had not yet reached that amount of time were excluded from the denominator).

Among those who were discharged, many moved into what can be seen as a positive situation – reunified with family, no longer in need, or in some other less restrictive setting. But others had less successful outcomes, with more than 1 in 5 being discharged due to eviction and/or disruptive behavior; nearly 1 in 10 being incarcerated; and more than 1 in 20 dying. Many others were moved into a more restrictive setting.

Key findings for OASAS Program:

Clients in OASAS experienced:

- A decrease in the percent with any inpatient use or ED use and in the average number of inpatient days and ED visits
- A reduction in ED visits for routine complaints, and nearly all types of potentially avoidable ED visits (except injury)
- A reduction in the percent with any inpatient or ED use for SMI
- A reduction in the percent with any inpatient or ED use for SUD
- A reduction in shelter use

Table 89. Reasons for MRT-SH Discharge, OASAS-RS Clients (n=264)

Generally positive	
Family reunification	11.4%
No longer in need	7.2%
Less restrictive setting	4.5%
No longer Medicaid eligible	0.0%
	23.1%
Generally neutral/undetermined	
Moved out of county or state	3.8%
Court ruling	0.8%
No longer interested	9.8%
	14.4%
Generally negative	
Incarcerated	9.1%
Deceased	6.4%
More restrictive setting	11.4%
Evicted and/or disruptive	21.2%
Dissatisfied with program	0.4%
Hospitalized	2.3%
Health reasons	3.0%
Residential substance abuse treatment	1.1%
Abandoned apartment	6.4%
	61.3%
Other/unknown	
All other reasons	1.1%
Unknown reason	0.0%
	1.1%

OPWDD EXPANSION PROGRAM

There were 71 clients enrolled in the OPWDD Expansion program between May 2013 and August 2017. Of these, 59 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment.

Overall utilization of inpatient and emergency services (MDW)

In contrast to most other programs, the percentage of OPWDD clients with at least one inpatient stay increased substantially between the pre-period and post-period (although this was not statistically significant). The percentage with at least one ED visit decreased somewhat, but was non-significant.

When looking at those clients who had a full two years of post-period continuous Medicaid coverage, the increase in Year 1 (Y1) inpatient care over the pre-period becomes nearly significant ($p<0.10$), as does the decrease in ED visits. Inpatient days further increase in Year 2 (Y2), but this is not significantly different from the other periods, and ED visits further decrease. The difference between ED visits in the pre-period and in the Y2 post-period is statistically significant.

Table 90. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, OPWDD Clients

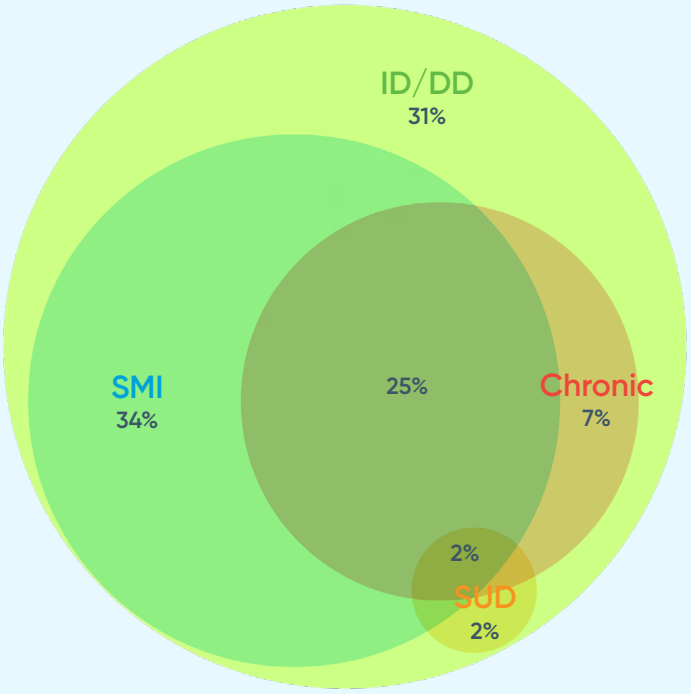
				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=59)	6.8%	15.3%	--	n.s.	--	--
Two year post-enrollment sample (n=49)	6.1%	18.4%	14.3%	†	n.s.	n.s.
Average number inpatient days						
Full sample (all)	0.54	0.85	--	n.s.	--	--
Two year post-enrollment sample (n=49)	0.55	1.02	1.61	n.s.	n.s.	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	37%	27%	--	n.s.	--	--
Two year post-enrollment sample (n=49)	39%	25%	29%	†	n.s.	n.s.
Average number of ED visits						
Full sample (all)	1.08	0.88	--	n.s.	--	--
Two year post-enrollment sample (n=49)	1.10	0.80	0.61	n.s.	*	n.s.

Note: Significance testing is done with the Wilcoxon test for count variables and the McNemar test for dichotomous variables.
*p > 0.01 & =< 0.05, †p >0.05 & < 0.10, n.s. = not significant

Common conditions in OPWDD

While all clients in OPWDD have a diagnosed intellectual or developmental disability (ID/DD), most have other comorbidities as well. Only 32% have an ID/DD alone, while 34% have an ID/DD and an SMI, and 27% have an ID/DD, an SMI, and another chronic medical condition.

Figure 13. Overlap Between Types of Chronic Conditions among OPWDD Clients (n=59)



Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding). Circles are not sized proportionately.

Severe mental illness. In addition to their diagnosis of an intellectual or developmental disability, an estimated 59% of OPWDD clients have at least one SMI diagnosis. Despite the high rate of SMI, the use of inpatient or ED care for SMI was quite low for this population. There was an increase in inpatient care for SMI (as there had been for inpatient care overall), but this was not statistically significant.

Table 91. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, OPWDD Clients (n=59)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	2%	7%	n.s.	2%	0	n.s.

*** p =<0.001, n.s. = not significant

Preventable ED use

There was relatively little change in the pre- and post-period ED visits for the selected routine conditions. The picture is somewhat different when looking at other categories of potentially avoidable ED visits, which nearly all increase. While these numbers are generally very small, the OPWDD program is different from many other supportive housing programs in that it represents a step-down to a less supervised setting. The step down to a less supervised setting can mean that clients may not have the same kind of round-the-clock access to trained support workers who would triage their health concerns. Therefore, they may have to rely more on their own judgment about when to seek care and the type of care once they are in supportive housing. Most of these changes are not statistically significant, with the exception of visits for non-emergent conditions and injury-related conditions.

Table 92. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, OPWDD Clients (n=59)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	24	23	-4%	n.s.
NYU Conditions				
Non-emergent	1	12	+1100%	*
Emergent, but primary care treatable	2	6	+200%	n.s.
Not primary care treatable, but avoidable	0	3	--	n.s.
Alcohol-related	0	0	--	--
Drug-related	0	0	--	--
Psychiatric-related	1	3	+200%	n.s.
Injury-related	0	9	--	*

*p > 0.01 & =< 0.05, n.s. = not significant

Housing stability

The OPWDD program drew clients from those who were already housed in a residential setting; therefore none of these clients had prior shelter use. Furthermore, none of the OPWDD clients who were discharged from MRT-SH ended up in homeless shelters (though note that only 15 clients had the correct geographical location and enrollment date to be included in the shelter use analysis).

Retention and reasons for discharge

Ninety percent of OPWDD clients stayed enrolled in the program for at least a year, with 80% staying enrolled for at least two years. Among those discharged, the median duration of enrollment at time of discharge was 21.7 months.

Table 93. Retention rate of OPWDD clients by months since enrollment (n=59)

% Retained at:	
6 months	97%
1 year	90%
18 months	88%
2 years	80%
3 years	67%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those still enrolled who had not yet reached that amount of time were excluded from the denominator).

Among those who had been discharged, the most common reason was being moved to a more restrictive or supervised setting (40%), but the second most common reason was being moved to a less restrictive setting (25%). Ten percent moved out of the service area.

Key findings for OPWDD Program:

Clients in OPWDD experienced:

- A reduction the average number of ED visits, but only in the second year following MRT-SH enrollment
- An increase in non-emergent ED visits and ED visits for injuries

Table 94. Reasons for MRT-SH Discharge, OPWDD Clients (n=20)

Generally positive	
Family reunification	0%
No longer in need	0%
Less restrictive setting	25%
No longer Medicaid eligible	0%
	25%
Generally neutral/undetermined	
Moved out of county or state	10%
Court ruling	0%
No longer interested	5%
	15%
Generally negative	
Incarcerated	5%
Deceased	5%
More restrictive setting	40%
Evicted and/or disruptive	0%
Dissatisfied with program	0%
Hospitalized	0%
Health reasons	0%
Residential substance abuse treatment	0%
Abandoned apartment	0%
	50%
Other/unknown	
All other reasons	5%
Unknown reason	5%
	10%

OHIP PROGRAMS

Health Home Supportive Housing Pilot (HHSHP)

There were 530 clients enrolled in the Health Homes Supportive Housing Pilot between December 2014 and July 2017. Of these, 319 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment.

Overall utilization of inpatient and emergency services

These clients had high rates of inpatient and ED utilization, with 57% having at least one inpatient stay and 77% having at least one ED visit in the year prior to MRT-SH enrollment. The volume of care was also quite high, with an average of 14.7 inpatient days and 6.2 ED visits. All of these measures declined significantly following MRT-SH enrollment, although rates still remained high for this population.

Looking at those clients who had 2 years of continuous post-period Medicaid enrollment, inpatient utilization continues to decline through the Year 2 (Y2) post-period (although the Y2 numbers are not significantly different from Y1). ED visits continue to decline in a similar way, although the change from pre-period to Y2 for at least one ED visit does not quite reach the level of statistical significance.

Table 95. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, HHSHP Clients

				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=319)	57%	42%	--	***	--	--
Two year post-enrollment sample (n=149)	58%	44%	39%	**	***	n.s.
Average number inpatient days						
Full sample (all)	14.7	8.5	--	***	--	--
Two year post-enrollment sample (n=149)	14.2	7.1	6.0	**	***	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	77%	70%	--	*	--	--
Two year post-enrollment sample (n=149)	76%	62%	48%	*	†	n.s.
Average number of ED visits						
Full sample (all)	6.2	3.9	--	***	--	--
Two year post-enrollment sample (n=149)	5.2	4.1	3.9	***	**	n.s.

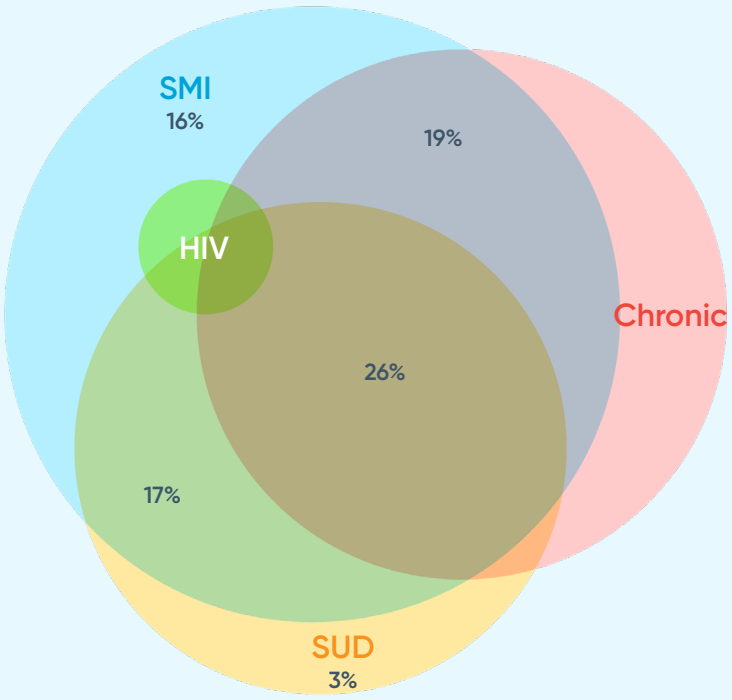
*** p =<0.001, ** p > 0.001 & =< 0.01, *p > 0.01 & =< 0.05, †p >0.05 & < 0.10, n.s. = not significant

Common conditions in the HHSHP program

More than one-quarter (26%) of the Health Home Pilot clients had a chronic condition and a substance use disorder and a severe mental illness. Another one in five (19%) had a chronic condition with an SMI, and 17% had an SUD with an SMI. Sixteen percent had an SMI alone. Only 6% had none of these identified conditions[57].

[57] There are a couple of reasons why Health Home clients, who must meet diagnostic criteria for eligibility, would not show up as having any of these conditions. First, they may have one of these diagnosed conditions, but no claims for that condition as a primary diagnosis during the 12-month period prior to their MRT-SH enrollment, so that they were not identified as such. Second, these analyses use 12 chronic medical conditions in addition to HIV, SMI, and SUD (see footnote pg. 13). These chronic medical conditions were selected because they are common and/or carry a high disease burden in terms of level of disability and costs to the system. The Health Homes program, however, uses a much vaster list of eligible conditions (including some, such as blindness, that would not necessarily be generating many treatment claims as a primary diagnosis).

Figure 14. Overlap Between Types of Chronic Conditions among HHSHP Clients (n=319)



Note: Not shown are the 6% of clients who have none of these conditions

Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

Severe mental illness. An estimated 78% of clients in the HHSHP program have at least one diagnosis of SMI. These clients use many inpatient and emergency services for a primary diagnosis of SMI – in the year before their MRT-SH enrollment, nearly one in four had at least one inpatient stay for SMI, and nearly one in five had at least one ED visit. Both decreases were statistically significant.

Substance use disorder. An estimated 50% of the clients in the HHSHP program were diagnosed with at least one SUD, and 17% had experienced at least one inpatient stay and/or at least one ED visit for a primary diagnosis of SUD in the year prior to MRT-SH enrollment. In the year following enrollment, the percentage with at least one inpatient stay dropped significantly to 12%. The percentage with at least one ED visit dropped more modestly, to 14% (p<0.10).

Cardiovascular conditions. An estimated 27% of HHSHP clients had at least one diagnosed cardiovascular condition, and 4.1% had experienced at least one inpatient stay and/or at least one ED visit in the year prior to MRT-SH enrollment. The percent with at least one inpatient stay decreased to 1.6% in the 12 months following MRT-SH enrollment, and this was nearly statistically significant (p=0.057).

Table 96. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, HHSHP Clients (n=319)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Severe mental illness	24%	15%	***	19%	11%	**
Substance use disorder	17%	12%	*	17%	14%	†
Cardiovascular conditions	4.1%	1.6%	†	4.1%	3.1%	n.s.

*** p =<0.001, n.s. = not significant

Preventable ED use

These clients have many ED visits for complaints that are frequently routine and non-emergent. In total, ED visits for these conditions decreased by 40%, which was a significant decline.

Looking at other classifications of ED care, there are significant decreases in many. ED visits for non-emergent conditions, alcohol-related conditions, drug-related conditions, psychiatric-related conditions, and injury-related conditions are all significantly lower in the 12 months after MRT-SH enrollment. Particularly striking is the result for alcohol-related visits, which declined by 68%.

Table 97. Total Number of Potentially Avoidable ED Visits, Pre- and Post-Enrollment, HHSHP Clients (n=319)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	293	177	-40%	***
NYU Conditions				
Non-emergent	291	210	-28%	*
Emergent, but primary care treatable	226	221	-2%	n.s.
Not primary care treatable, but avoidable	79	63	-20%	n.s.
Alcohol-related	397	127	-68%	***
Drug-related	44	25	-43%	*
Psychiatric-related	197	122	-38%	**
Injury	195	125	-36%	**

*** p =<0.001, ** p > 0.001 & =< 0.01, *p > 0.01 & =< 0.05, n.s. = not significant

Housing stability

This program had one of the higher rates of pre-period shelter use, at 43%. There was a sharp and statistically significant drop during the Y1 post-period. For those with 2-year post-data this was maintained through Y2.

Table 98. Documented shelter use among HHSHP Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=134)	43%	6%	--	***	--	--
Pre vs. Y1 & Y2 Post (n=98)	50%	6%	7%	***	***	n.s.

*** p =<0.001, n.s. = not significant

Retention and reasons for discharge

The HHSHP program has a quite high rate of six-month retention, although there is a sharp drop in the percent retained between 6 months and one year (from 88% to 60%)

Many discharges from the program are for reasons likely due to positive developments in the client's life. The most common reason for discharge, by far, is that the client is no longer in need (44%). Less than one third of clients leave for reasons that likely represent negative developments for them.

Table 99. Retention rate of HHSHSP clients by months since enrollment (n=319)

% Retained at:	
6 months	88%
1 year	60%
18 months	48%
2 years	38%
3 years	5%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those still enrolled who had not yet reached that amount of time were excluded from the denominator).

Table 100. Reasons for MRT-SH Discharge, HHSHP Clients (n=179)

Generally positive	
Family reunification	3.9%
No longer in need	44.1%
Less restrictive setting	2.2%
No longer Medicaid eligible	2.2%
	52.4%
Generally neutral/undetermined	
Moved out of county or state	0.6%
Court ruling	0%
No longer interested	5.6%
	6.2%
Generally negative	
Incarcerated	6.2%
Deceased	4.0%
More restrictive setting	7.8%
Evicted and/or disruptive	6.1%
Dissatisfied with program	1.1%
Hospitalized	0.6%
Health reasons	0.6%
Residential substance abuse treatment	1.7%
Abandoned apartment	1.7%
	29.8%
Other/unknown	
All other reasons	8.4%
Unknown reason	3.3%
	11.7%

Nursing Home to Independent Living (NHIL) – Transition Only

- **Program Description:** NHIL provides an array of services intended to establish independence, wellness, and self-management, including rental subsidies, community transition services, environmental modifications, tenancy sustaining services, and preventive health services.
- **Population Served:** Participants are elderly or physically disabled; in a nursing home or eligible for a nursing facility level of care; and homeless or unstably housed. The 33 participants included in this analysis transitioned out of a nursing home with program assistance. Pre-period nursing home use ranged from 5 to 315 days, with an average of 179.3 and a median of 182.5 (exactly 6 months).
- **Program Start Date:** January 2015
- **Enrollment:** There were 33 NHIL transition clients who met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment. There were too few clients with a second year of post-period data available to provide two-year analyses.

Overall inpatient and ED utilization

The NHIL transition clients had high rates of both inpatient and ED use in the year prior to their MRT-SH enrollment. Eighty-two percent had at least one inpatient stay, with an average of 14.1 inpatient days. Two-thirds (67%) had at least one ED visit, with an average of 2.0. While the percentage with at least one inpatient stay decreased dramatically and significantly following MRT-SH enrollment, the average number of inpatient days actually increased slightly. The percentage with at least one ED visit did not change, but the average number of ED visits increased, although not statistically significant.

Table 101. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, NHIL Transition Clients (n=33)

	Pre	Post	P-value
Inpatient utilization			
Any inpatient care	82%	52%	**
Average number inpatient days	14.1	15.0	n.s.
Emergency department utilization			
Any ED visits	67%	67%	n.s.
Average number of ED visits	2.0	3.2	n.s.

**p > 0.001 & =< 0.01, n.s. = not significant

Common conditions in NHIL

Nearly all of the clients in the NHIL transition program have one of the identified chronic medical conditions, either without a behavioral comorbidity (36%) or in combination with an SMI (55%). Twelve percent have an SUD, but this is not shown in combination with other conditions because of the small cell size. The small size of this program also does not support the testing of p-values in the table below.

Severe mental illness. An estimated 61% of NHIL transition clients are diagnosed with at least one SMI. Utilization of inpatient and emergency care for SMI was quite low, however.

Cardiovascular conditions. An estimated 70% of NHIL clients have at least one diagnosed cardiovascular condition. More than 15% had at least one inpatient stay for a cardiovascular condition prior to MRT-SH enrollment, and 3% had at least one ED visit for such a condition. There were no inpatient stays for cardiovascular diagnoses in the year following MRT-SH enrollment, but the percent with at least one ED visit doubled, to 6.1%.

Diabetes. An estimated 36% of NHIL clients have a diagnosis of diabetes. In the year before their program enrollment, slightly more than 9% had at least one inpatient stay for diabetes and none had any ED visits. The likelihood of inpatient care for diabetes decreased in the year following MRT-SH enrollment.

Table 102. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, NHIL Transition Clients (n=33)

	Any inpatient		Any ED visits	
Primary Dx	Pre	Post	Pre	Post
Severe mental illness	3%	0%	3%	3%
Cardiovascular conditions	15%	0%	3%	6%
Diabetes	9%	3%	0%	3%

Preventable ED use

ED visits for the selected routine conditions increased in the 12 months following MRT-SH enrollment, from nine to 17. While this was a large increase, it was based on small numbers and was not statistically significant. There is a similar pattern when looking at other classifications of potentially avoidable ED visits. ED visits increase, but there are no statistically significant findings.

Table 103. Potentially Avoidable ED Visits, Pre- and Post-Enrollment, NHIL Transition Clients (n=33)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	9	17	+89%	n.s.
NYU Conditions				
Non-emergent	16	18	+13%	n.s.
Emergent, but primary care treatable	6	10	+67%	n.s.
Not primary care treatable, but avoidable	6	9	+50%	n.s.
Alcohol-related	0	1	--	n.s.
Drug-related	0	1	--	n.s.
Psychiatric-related	1	4	+400%	n.s.
Injury	13	18	+38%	n.s.

n.s. = not significant

Housing stability

None of the NHIL transition clients met the geographic and enrollment date requirements to examine their shelter use.

Retention and reasons for discharge

The NHIL transition program has a high retention rate, with nearly 80% of clients still enrolled after a year and nearly 60% of clients still enrolled after two years.

The total number of clients discharged is too small to fruitfully break out by discharge reasons, most of which only apply to one client.

Table 104. Retention rate of NHIL Transition clients by months since enrollment (n=33)

% Retained at:	
6 months	82%
1 year	79%
18 months	73%
2 years	59%
3 years	8%

Note: 2- and 3-year retention are calculated based on those observed for at least that time period (i.e. those still enrolled who had not yet reached that amount of time were excluded from the denominator).

Senior Supportive Housing Pilot (SSHP)

There were 630 clients enrolled in the Senior Supportive Housing Pilot (SSHP) between December 2014 and November 2016. Of these, 377 met the criteria for full, continuous Medicaid coverage for 12 months before and 12 months after their enrollment.

Overall utilization of inpatient and emergency services

In contrast to most other programs, inpatient care increased among the SSHP population. The percent with any inpatient stay rose from 22% to 29%, while the average number of inpatient days rose from 1.7 to 2.7. Both increases were statistically significant. There was not a significant change in ED use. For those with two-year post-period data, there was minimal difference between Year 1 (Y1) and Year 2 (Y2) data.

Table 105. Inpatient and Emergency Department Utilization, Pre- and Post-Enrollment, SSHP Clients

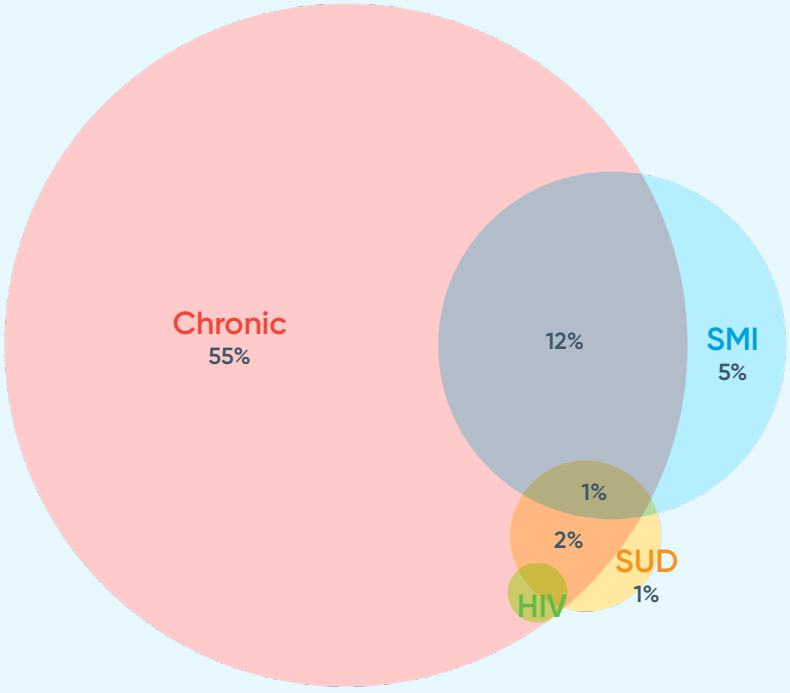
				P-value		
	Pre	Y1 Post	Y2 post	Pre vs. Y1 post	Pre vs. Y2 post	Y1 post vs. Y2 post
Inpatient utilization						
Any inpatient care						
Full sample (n=377)	22%	29%	--	*	--	--
Two year post-enrollment sample (n=230)	23%	26%	23%	n.s.	n.s.	n.s.
Average number inpatient days						
Full sample (all)	1.7	2.7	--	*	--	--
Two year post-enrollment sample (n=230)	1.7	2.5	3.0	n.s.	n.s.	n.s.
Emergency department utilization						
Any ED visits						
Full sample (all)	35%	36%	--	n.s.	--	--
Two year post-enrollment sample (n=230)	36%	36%	33%	n.s.		n.s.
Average number of ED visits						
Full sample (all)	0.9	0.8	--	n.s.	--	--
Two year post-enrollment sample (n=230)	0.9	0.9	0.9	n.s.	n.s.	n.s.

n.s. = not significant

Common conditions in SSHP

SSHP was much more heavily focused on non-behavioral chronic conditions than other programs. Fifty-five percent of clients had a chronic medical condition alone, while another 15% had a chronic medical condition in combination with a behavioral health condition – either SMI (12%), SUD (2%), or both (1%). One-quarter of clients had none of these identified conditions, but may have had other chronic medical conditions or disabilities that were not among those specifically examined.

Figure 15. Overlap Between Types of Chronic Conditions among SSHP Clients (n=377)



Note: Not shown are the 25% of clients who have none of the identified conditions

Note: To obtain total percentage of participants with a given diagnosis, sum all percentages that fall into the relevant circle (but may not exactly match text due to rounding).

Cardiovascular disease. An estimated 37% of SSHP clients had at least one diagnosis of cardiovascular disease. Nearly 4% had at least one inpatient stay for a cardiovascular diagnosis during the pre-period, and this increased to 5% in the 12 months following MRT-SH enrollment. The percentage with at least one ED visit for this category of diagnosis was lower at 1.6%, and declined slightly following MRT-SH enrollment. Neither change was statistically significant.

Diabetes. An estimated 33% of SSHP clients had a diagnosis of diabetes. The rate of inpatient stays for a primary diagnosis of diabetes was relatively low (less than 1%) in the year prior to MRT-SH enrollment, and increased only slightly in the year after. ED visits for diabetes were slightly more common, at just over 2%, and these decreased in the post-period. Neither result was statistically significant.

Table 106. Inpatient and Emergency Utilization for Common Conditions, Pre- and Post-Enrollment, SSHP Clients (n=377)

	Any inpatient			Any ED visits		
Primary Dx	Pre	Post	P-value	Pre	Post	P-value
Cardiovascular conditions	4%	5%	n.s.	2%	1%	n.s.
Diabetes	1%	1%	n.s.	2%	1%	n.s.

n.s. = not significant

Preventable ED use

ED visits for the selected routine conditions did not change in the 12 months following MRT-SH enrollment. Looking at other classifications of potentially avoidable ED visits, the patterns are mixed. ED visits for non-emergent conditions, avoidable conditions, and injuries increased, while visits for other types of conditions decreased or did not change. None of the changes were statistically significant.

Table 107. Potentially Avoidable ED Visits, Pre- and Post-Enrollment, SSHP Clients (n=377)

	Pre	Post	Change	Sig.
Excellus Conditions				
Selected routine conditions	63	63	0%	n.s.
NYU Conditions				
Non-emergent	63	80	+27%	n.s.
Emergent, but primary care treatable	63	52	-14%	n.s.
Not primary care treatable, but avoidable	14	25	+79%	n.s.
Alcohol-related	3	2	-33%	n.s.
Drug-related	1	1	0%	n.s.
Psychiatric-related	12	7	-42%	n.s.
Injury	38	46	+21%	n.s.

n.s. = not significant

Housing stability

This was a program with low baseline rates of shelter use in the pre-period, but the change from 3% in the pre-period to zero in Y1 was statistically significant. Among those with a second post-period year of data, the same result was observed. There was a slight increase in Y2, which was not statistically significant from the pre-period.

Table 108. Documented shelter use among SSHP Clients, Pre- and Post-Enrollment

	Shelter Use			P-value		
	Pre	Y1 Post	Y2 Post	Pre vs. Y1	Pre vs. Y2	Y1 vs. Y2
Pre vs. Y1 Post (n=181)	3%	0%	--	*	--	--
Pre vs. Y1 & Y2 Post (n=152)	4%	0%	1%	*	n.s.	n.s.

*p > 0.01 & =< 0.05, n.s. = not significant

Retention and reasons for discharge

This program only ran for 24 months, and so no clients were enrolled in the program for more than two years. Due to variation in enrollment dates, most clients spent substantially less time in the program before it ended. When only those clients enrolled 6 months or more before the end of the program were examined, 94% of them were still enrolled at 6 months. When only those clients enrolled at least 12 months before the end of the program were examined, 86% were still enrolled at 12 months. And when only those clients enrolled at least 18 months before the end of the program were examined, 71% were still enrolled at 18 months.

Of the 71 clients who were discharged before the program end, the most common reason was for health reasons (15.5%). A high percentage also moved to a more restrictive setting or were deceased (both 14.1%).

Key Findings for OHIP Programs:

Clients in HHSP experienced:

- A reduction in the percent with any inpatient or ED use overall, and in the average number of inpatient days and ED visits
- A reduction in the percent with any inpatient and ED use for SMI
- A reduction in the percent with any inpatient care for SUD
- A reduction in ED visits for routine complaints, non-emergent conditions, and injuries, as well as in alcohol-related, drug-related, or psychiatric-related ED visits
- A reduction in shelter use

Clients in the NHIL transition program experienced:

- A reduction in the percentage with at least one inpatient stay

Clients in the SSHP program experienced:

- An increase in the percent with any inpatient use and in the number of inpatient days
- A decrease in shelter use in Year 1

Table 109. Retention rate of SSHP clients by months since enrollment (n=377)

% Retained at:	
6 months	94%
1 year	86%
18 months	71%
2 years	--

Note: Rates are calculated based on those observed for at least that time period (i.e. those enrolled less than that amount of time prior to the program end date were excluded from the denominator).

Table 110. Reasons for MRT-SH Discharge, SSHP Clients (n=71)

Generally positive	
Family reunification	5.6%
No longer in need	1.4%
Less restrictive setting	5.6%
No longer Medicaid eligible	2.8%
	15.4%
Generally neutral/undetermined	
Moved out of county or state	2.8%
Court ruling	1.4%
No longer interested	5.6%
	9.8%
Generally negative	
Incarcerated	0%
Deceased	14.1%
More restrictive setting	14.1%
Evicted and/or disruptive	1.4%
Dissatisfied with program	0%
Hospitalized	1.4%
Health reasons	15.5%
Residential substance abuse treatment	1.4%
Abandoned apartment	0%
	47.9%
Other/unknown	
All other reasons	26.8%
Unknown reason	0%
	26.8%

Summary and Conclusions

The MRT-SH programs are serving a diverse population, with serious health needs and high rates of comorbidities. Consistent with the design and intention of the MRT-SH initiative, the programs are serving a seriously ill population with high rates of comorbidities. The program participants are racially and ethnically diverse, with a mean age of 47.1 years. Across the programs, there is a significant overlap in the populations served, given this high rate of comorbidities.

Most programs are serving participants who utilized a significant amount of high cost Medicaid services prior to enrollment in supportive housing. Prior to enrollment in supportive housing, in general, participants experienced high rates of inpatient and emergency department utilization, especially for care related to mental health conditions and substance abuse. This finding suggests that most programs are enrolling high cost Medicaid utilizers.

When considering the MRT-SH programs overall, inpatient and emergency department services are being used less. Following enrollment in supportive housing, virtually all inpatient and emergency department services were used significantly less when considering the MRT-SH program participants overall. This finding is consistent with previous supportive housing research, which noted reductions in acute, high cost services, such as inpatient and emergency department visits (Goering et al., 2015; Metraux et al., 2003; Srebnik et al., 2013; Sadowski et al, 2009; Wright et al., 2016). Unquestionably, this reduction in utilization is a positive finding within the current study. Not only is care in these settings more costly, but an inpatient admission or emergency department visit may be suggestive of a chronic condition or health crisis that negatively impacts a patient's quality of life overall (particularly for mental health and substance abuse conditions). Patients may also use emergency departments inappropriately to seek care for conditions that could be more effectively managed in a doctor's office or clinic. The current study suggests that housing and supportive services provided by the MRT-SH programs may be effectively reducing these types of visits as well.

The findings of the pre-post analyses varied substantially across programs. A number of programs showed particular promise in terms of reducing inpatient and emergency department utilization in the current study, including the AIDS Institute "services only" program, OASAS Rental Subsidies, OMH Rental Subsidies Statewide, and the OTDA Homeless Housing and Assistance Program (HHAP) programs. Of these programs, OASAS Rental Subsidies and OMH Rental Subsidies Statewide showed especially strong findings, with significant reductions across all (for OASAS Rental Subsidies) or almost all (for OMH Rental Subsidies Statewide) major inpatient and emergency department service categories measured. Some programs showed less promising findings to date, though it is important to note that at this early stage, findings may change as the evaluation continues. There were no statistically significant differences in use of inpatient or emergency department care for the East 99th Street program and the OPWDD Expansion program. For the OPWDD program in particular, it is important to note that participants typically did not have high rates of acute service utilization in the pre-period. Since these participants are transitioning from more intensive supervised settings into supportive housing, a trajectory leading to Medicaid cost savings is likely to differ from the other programs (e.g., potential costs savings are more likely to result from reductions in cost of the program setting, rather than savings from participants' utilization of high cost Medicaid services).

In the current study, increases to primary care services are not observed, but neither are increases in inpatient and emergency services. This finding suggests that the MRT-SH enrollees are suffering no ill effects of a primary care decrease; if they were not receiving needed care, they would be more likely to require acute hospital services (e.g. inpatient/emergency department services). It may be the case that the overall health of these enrollees has improved, reducing a need in the overall volume of health services.

More research is needed to understand how the MRT-SH programs are impacting the trajectories of program participants. While these findings are promising, there is still much to learn about how MRT-SH programs may improve the lives of enrollees. One critical element is to learn more about the content of the supportive services that are being provided by different MRT-SH programs, which will be highlighted in the upcoming implementation study. Another approach is to conduct more sophisticated statistical modeling that holds constant for demographic characteristics and other variables known to affect health care outcomes. In sum, this is only a first look at a promising new approach to housing as health care. As more data become available, there is much more to learn about the potential of the MRT-SH initiative.

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Appendix A:

HEALTHCARE EFFECTIVENESS DATA AND INFORMATION SET (HEDIS) AND PREVENTION QUALITY INDICATOR (PQI) MEASURES

HEDIS measures are quality of care measures from the National Committee for Quality Assurance (NCQA) that are used to construct national performance statistics and benchmarks, set standards, and measure quality improvement. These measures were specifically designed to gauge the quality of health plans, but are often used as an indicator for quality of care more generally. Some pulls of historical HEDIS measures were done for some of the MRT-SH clients in order to see if they are receiving better health care services following MRT-SH enrollment.

The sample was limited for a couple of reasons. First of all, not all clients had enrollment dates that aligned with the historical periods available. Second, clients who are eligible for Medicare as well as Medicaid are excluded from HEDIS data. Finally, many of the measures available apply only to subsets of clients who have a qualifying condition or event (e.g. cardiovascular disease or an inpatient stay for mental health) or who fit a certain demographic (e.g. women, older adults). Because each measure has different inclusion criteria, each measure has a different sample size.

Analyses of HEDIS measures use a difference in proportions test for two populations, since the same individuals do not necessarily meet the inclusion criteria for the same measures in both the pre- and post-period.

Overall, many of the measures are trending in the right direction, but few are statistically significant. This may be in part because of the limited sample size for most measures. However, it should also be noted that these measures are designed to track population health, not the quality of care received by individuals. Furthermore, the measures largely reflect the quality of care offered by providers rather than measuring patient health outcomes. As our sample is limited to MRT-SH clients who have 12 months of continuous Medicaid coverage both before and after their MRT-SH enrollment, it is very likely that many of these clients have the same health plan and are seeing the same providers in their post-enrollment period as they did in their pre-enrollment period. While clients who are stabilized in housing may be more likely to comply with provider recommendations for screening, monitoring and medication, or may be receiving case management services as a result of their supportive housing placement, participation in MRT-SH is unlikely to change the behavior of one's health care provider. Given this focus, it may not be surprising that there are not more substantial or significant effects.

Table A1. Selected HEDIS Measures (denominator > 20), MRT-SH Clients Overall

	Pre-Period			Post-Period			
Ambulatory/preventive care	# with visit	Eligible Pop.	%	# with visit	Eligible Pop.	%	P-value
% of patients 1+ ambulatory or preventive visits	651	677	96%	821	802	98%	†
Preventive screenings	# with screening	Eligible pop.	%	# with screening	Eligible pop.	%	P-value
Breast cancer screening	45	103	44%	51	96	53%	n.s.
Colorectal cancer screening	89	226	39%	117	281	42%	n.s.
Cervical cancer screening	190	302	63%	215	330	65%	n.s.
Readmissions							
% of inpatient stays with readmission (2016 or later)	50	149	34%	54	190	28%	n.s.

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Behavioral health medication management/ adherence	# receiving treatment	# eligible	%	# receiving treatment	# eligible	%	P-value
Antidepressant med management – acute phase (new Dx of depression)	52	90	58%	77	124	62%	n.s.
Antidepressant med management – recovery phase (new Dx of depression)	45	90	50%	55	124	44%	n.s.
Adherence to antipsychotic medications for people with schizophrenia	53	95	56%	52	110	47%	n.s.
Adherence to mood stabilizers for people with bipolar I disorder	27	56	48%	60	116	52%	n.s.
Preventive screening/ monitoring							
Diabetes screening for those on antipsychotic medication	130	142	92%	127	148	86%	n.s.
Diabetes monitoring from people with schizophrenia and diabetes	21	28	75%	32	44	73%	n.s.
Behavioral health follow-up care							
Follow-up after hospitalization for mental illness – 7 day	58	119	49%	50	95	53%	n.s.
Follow-up after hospitalization for mental illness - 30 day	83	119	70%	72	95	76%	n.s.
Initiation of AOD treatment (new episode of dependence)	103	197	52%	87	163	53%	n.s.
Engagement of AOD treatment (new episode of dependence)	58	197	29%	28	163	17%	**
Quality of care for HIV treatment							
Engaged in care	132	136	97%	227	240	95%	n.s.
Syphilis screening	97	135	72%	181	240	75%	n.s.
Viral load monitoring test	85	136	63%	173	240	72%	†
Monitoring for patients on:	# receiving monitoring	# eligible.	%	# receiving monitoring	# eligible	%	P-value
ACE inhibitors	36	37	97%	72	80	90%	n.s.
Diuretics	28	29	97%	42	47	89%	n.s.
Preventive screenings for clients with diabetes							
Eye exam	46	140	33%	78	189	41%	n.s.
Hemoglobin test	114	140	81%	148	189	78%	n.s.
Screening or care for nephropathy	122	140	87%	169	189	89%	n.s.

The Prevention Quality Indicators (PQIs) are measures of potentially avoidable hospitalizations for Ambulatory Care Sensitive Conditions (those conditions which could be prevented by effective treatment on an outpatient basis). The PQIs are calculated using hospital discharge data, but are intended to reflect issues of access to, and quality of, ambulatory care in a given geographic area.

These are obtained from the same source as the HEDIS measures, and are subject to the same limitations. Many of these showed a decrease in admissions, but none were statistically significant. (Heart failure admission rates actually increased to a degree that approached statistical significance.)

As with the HEDIS measures, the PQIs are intended to assess population health rather than individual health, and will be heavily influenced by provider behaviors rather than being predominantly a reflection of individual client behaviors.

Table A2. Selected PQI measures (denominator >20), MRT-SH Clients Overall

Prevention Quality Indicators	Pre/ per 100	Post/ per 100	P-value
Overall composite	6.9	6.1	n.s.
Acute composite	0.5	1.5	n.s.
Chronic composite	6.3	4.6	n.s.
Heart failure admission rate	0.2	0.8	†
Prevention quality diabetes composite	1.2	1.2	n.s.
COPD/asthma admission rate (older adults)	4.2	3.1	n.s.
Asthma admission rate (younger adults)	2.0	1.4	n.s.

Appendix B.

MEDICATION ADHERENCE

Some measures of medication adherence were included in the HEDIS measures presented in Appendix A. As noted, however, the HEDIS measures were subject to sample size restrictions that prevented the use of certain medication measures because not enough clients eligible for those indicators had HEDIS matches in the available data.

Medication adherence is an outcome that would appear to be more subject to client behaviors than many of the other quality measures, and thus an outcome where we might expect to see greater changes as a result of stable housing and supportive services. For this reason, MDW data were used to delve more deeply into measures of medication adherence that could not be adequately obtained from the HEDIS data. There are still some limitations of sample size, as clients must have a particular condition in order to qualify for the measure.

The measure calculated is proportion of days covered (PDC). This is the standard promoted by the Pharmacy Quality Alliance and is the preferred method of the Centers for Disease Control for calculating medication adherence. The PQA measures generally assess the percentage of patients with at least two prescriptions for a type of medication who have a PDC of >=80% for medications in that therapeutic class. The exception to this is HIV antiretrovirals, which is based on a PDC >=90% for at least 2 medications. Because of the complexity around HIV medication regimens, antiretroviral adherence will be examined in detail in a separate appendix (Appendix C).

Also slightly different are the standard measures for asthma medication adherence. The asthma medication ratio (AMR) is the ratio of controller medications to total asthma medications. The standard measure for AMR is the percentage of clients with an AMR of 0.50 or greater. Another quality standard, which falls under the HEDIS measures, is the percentage of people who achieve 50% and 75% compliance to their controller medications. Both the AMR and the 50% and 75% compliance measures for asthma medication are included in the table below.

As with the previous quality measures that have relegated to appendices, most indicators trend in the right direction, but few are statistically significant, probably in many cases due to the relatively small numbers of people who meet the inclusion criteria. One of the exceptions is antidepressant use among people with major depressive disorder. This is notable because there was not a significant change in the related HEDIS measure, which was limited only to people with new diagnoses of depression. The other exception is the 75% asthma medication compliance indicator. This improvement in medication adherence may be related to the encouraging, but not statistically significant, findings for decreased asthma admission rates (Table A2).

Table B1. Medication adherence measures, MRT-SH Clients Overall

Proportion of days covered (PDC) >=80%			
Antidepressants (for major depressive disorder only)	48%	55%	*
Beta-blockers	36%	36%	n.s.
ACE inhibitors or ARBs	42%	46%	n.s.
Calcium-channel blockers	37%	40%	n.s.
Statins	37%	43%	n.s.
For people with cardiovascular disease	31%	50%	n.s.
For people with diabetes	37%	45%	n.s.
Diabetes drugs (exclude insulin users)	46%	52%	n.s.
Asthma medication measures			
Asthma medication ratio (AMR) >=0.50	46%	51%	n.s.
Asthma medication - 50% compliance	50%	54%	n.s.
Asthma medication - 75% compliance	30%	43%	**

Appendix C:

HIV ANTIRETROVIRAL MEDICATION ADHERENCE

Since the 1980s, HIV/AIDS has progressed from being a uniformly life-ending illness to one that is manageable over decades with a careful regimen of antiretroviral medications. This progress has come with a cost, however. Antiretrovirals are expensive and must be taken consistently and in specific combinations. Furthermore, many people with HIV have co-occurring risk factors such as severe mental illness, substance abuse, or homelessness that make it difficult to consistently maintain such costly and complicated regimens. This is particularly true of MRT-SH clients with HIV, who have particularly complex clinical profiles.

People with HIV are also particularly high consumers of health care resources, and as such are a population of particular interest from a health policy perspective. The companion report to this one, which focuses on cost changes in the MRT-SH programs, shows that MRT-SH clients in AIDS Institute programs have average pre-period pharmacy costs ranging from $19,616 to $24,923 per year between the three programs. Furthermore, average pharmacy costs increased substantially in the post-period – by an average of $601 to $3,865 per person depending on program. Pharmacy is the top driver of costs among the MRT-SH population with HIV. Understanding the changes in pharmacy costs is key not only because it constitutes such a large share of spending for these clients, but also because increased pharmacy cost may be seen as a positive for this population if it indicates greater medication adherence.

Classes of HIV Medications

There are several classes of ARV drugs used in the treatment of HIV/AIDS, and most of these classes contain several different medication options.

Nucleoside Reverse Transcription Inhibitors (NRTIs): include abacavir, emtricitabine, lamivudine, tenofovir, zidovudine

Non-Nucleoside Reverse Transcription Inhibitors (NNRTIs): include doravirine, efavirenz, etravirine, nevirapine, and rilpivirine

Protease Inhibitors (PIs): include atazanavir, darunavir, fosamprenavir, tipranavir, and ritonavir (a PI, but usually used as a pharmacokinetic enhancer to another PI rather than being prescribed alone). Cobicistat is also used as a booster or enhancer to a PI. It is recommended that PIs be prescribed in conjunction with either ritonavir or cobicistat as a booster.

Integrase Inhibitors (IIs): include dolutegravir and raltegravir.

Other classes: include fusion inhibitors (enfuvirtide), CCR5 antagonists (maraviroc), and post-attachment inhibitors (ibalizumab).

PQA measure

The PQA measure for HIV medication adherence is calculated *for persons who had at least two fills of an antiretroviral during the pre-period measurement year*[58]. For this denominator is calculated the percent who had at least 90% proportion of days covered (PDC) for at least two different medications. This was estimated by looking at the percent of clients with HIV who had at least 180% PDC for HIV medications. This remained virtually unchanged – 98% in the pre-period and 95% in the post-period.

CDC recommendations

While the PQA measure is useful as a quick look at antiretroviral supply days, the CDC has more detailed current recommendations for an antiretroviral regimen. These guidelines in full are more detailed than the research team was able to analyze, including testing for the type of HIV virus, the presence of Hepatitis B as a coinfection, and changes in regimen if a patient is experiencing a failure of their antiretroviral medications. Therefore some MRT-SH clients who are not receiving the exact regimen recommended for most treatment-naïve patients may be receiving a somewhat different regimen for clinically appropriate reasons. However, adherence to the basic guidelines is probably a good indicator of treatment adequacy for the MRT-SH population as a whole.

[58] 25% of clients with HIV in both the pre- and the post-period were not receiving any HIV medications

The basic guidelines include the use of two NRTI medications and one non-NRTI medication, which can be either an NNRTI, a PI boosted with ritonavir or cobicistat, or an II. Adherence to this recommended regimen was estimated by at least 657 supply days of NRTIs (equivalent to >=90% PDC for two medications) and at least 328 supply days of an NNRTI, a boosted PI, an II, or some combination thereof (equivalent to >=90% PDC for non-NRTIs). Many patients were prescribed combination drug products that included two or more medications; the supply days of these drugs were counted for each active ingredient (e.g. if a client was prescribed 90 days of Atripla, which is a combination of an NNRTI and two NRTIs, this was counted as 180 days of NRTI and 90 days of NNRTI).

It was a minority of clients with HIV that were receiving this regimen (37% in the pre-period and 39% in the post-period). Among clients receiving at least two fills of medication in the pre-period the numbers were only slightly better – 49% in the pre-period and 51% in the post-period. Again, we would not expect 100% of clients to be adhering to the described regimen under the best of circumstances simply because there are several valid clinical reasons for variation. However, given the increase in pharmacy spending for clients in AIDS Institute programs between the pre-period and the post-period, we would expect to see a marked increase in adherence to this regimen.

The results for specific programs targeted to clients with HIV did not look much different, which is not surprising as the majority of MRT-SH clients with HIV were in one of these programs. The percentage of patients meeting this indicator of medication adherence increased minimally (except in the pilot program, where it decreased, and the HHAP program where it increased more dramatically – but both programs were very small).

Table C1. Adherence to the "Base" CDC Guidelines for ARV Prescribing

	All Clients with HIV			Clients with >= 60 supply days Pre		
	Pre	Post	N	Pre	Post	N
AI: Services only	40%	42%	624	53%	54%	480
AI: Services + Subsidies	26%	28%	144	35%	38%	105
AI: Pilot	41%	35%	17	44%	38%	16
HHAP: Evergreen	37%	47%	19	44%	56%	16

The lack of meaningful increases in ARV medication use among clients with HIV is puzzling given the substantial pre-post increases in pharmacy spending in the AIDS Institute programs. Further analyses, however, showed the following:

- Only 21% of pharmacy claims (and 23% of supply days) for clients with HIV were for ARV drugs.
  - » Nine percent of pharmacy claims for clients with HIV were for behavioral health drugs, 10% were for cardiovascular drugs, 6% were for anti-asthmatics, and 2% were for diabetes drugs.
- Increases in pharmacy spending outstripped increases in supply days, both for all pharmacy and for ARV drugs.
  - » Supply days for all medications for clients with HIV increased 0.9% between the pre- and post-periods, but cost per supply day increased by 9% over the same period
  - » Total supply days for ARV decreased by 1.5%, but the cost of ARV drugs per supply day increased by 10%.
- Much of the increase in spending for ARVs was because cheaper, single-drug products were being replaced with newer and more expensive combination drug products. However, when supply days were counted for each active ingredient, the percentage of clients receiving the recommended base drug regimen did not increase in any meaningful way.

In conclusion, it appears that most of the increased spending on pharmacy for MRT-SH clients with HIV is due to increases in drug prices (even accounting for combination products) rather than to greater adherence to ARV regimens.

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