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Medicaid Redesign Team
Supportive Housing Evaluation

Cost Report

Year 3: Treatment versus Comparison
Group, Investments versus Savings Analyses

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Executive Summary

This report details Medicaid spending changes associated with enrollment in programs sponsored by the New York State Medicaid Redesign Team's Supportive Housing Initiative (MRT-SH), including a summary of these projects and the full cross-sector cost characteristics of the people enrolled versus a comparison group of people who were similar to MRT-SH clients but were not enrolled. For each included MRT-SH participant, cost data are presented from one year before participant enrollment (defined here as the pre-period) through the first year post-enrollment (the post-period); for each included Comparison participant, cost data are presented for a similar two-year timespan. Cost data include Medicaid claim spending, investments into MRT-SH supportive housing (both MRT and non-MRT development costs, and program service and operating costs), and other cross-sector spending (utilization of inpatient psychiatric centers, Office of Mental Health (OMH) residential settings, and homeless shelters). The goal of the analysis is to present a comparison between overall spending before and after MRT-SH program enrollment for enrolled clients versus similar but not enrolled Medicaid users. Additionally, pre-post analyses are presented for participants in Office of People with Developmental Disabilities (OPWDD) Rental Assistance and Olmstead Housing Subsidy programs using an extended two-year post-period, where available.

METHODOLOGY

The MRT-SH Treatment and Comparison participants examined here were consistent with the groups used in the Cost 2, Volume 2 report. All costs were adjusted for inflation to 2015 dollars.

Medicaid Data Warehouse (MDW) fee-for-service claims and managed care plan reported (encounter) data were used to calculate pre- and post-period Medicaid claim costs. Investments into supportive housing were determined by examination of disbursement records provided by the New York State Department of Health, including monthly budgets and annual program submissions through 2017. Expenditures were categorized as service and operating funds (i.e., costs of implementing the services provided by programs, such as rental subsidy payments, counselor services, utilities costs, or administrative spending) or development costs (i.e., funds need to purchase or mortgage a building or set of apartments). Investments were annualized into per-person, per-year costs by dividing by the total number of clients served by the program, and either the average length of stay (for service and operating costs) or 30 years (for development costs, to estimate the lifespan of the building). Cross-sector costs were calculated by determining the number of days each participant spent in inpatient psychiatric hospital, OMH residential facility, and homeless shelter settings in their pre- or post-period, then multiplying that number by an appropriate daily rate.

Pre- and post-period spending was then computed and compared between the Treatment and Comparison group participants. A two (time: pre-period, post-period) by two (group: Treatment, Comparison) repeated measures ANOVA was then performed to examine the main effects of these factors, and to determine whether there was an interaction between time and group on changes in overall expenditures, and thus whether the Treatment group showed a greater mean spending decrease (i.e., greater savings) than the Comparison group. These analyses were performed for the full Treatment versus Comparison groups, and within each Medicaid claim spending decile.

Simple pre-post comparisons were also conducted for eligible participants in OPWDD Rental Assistance and Olmstead Housing Subsidy programs.

KEY FINDINGS

- When non-Medicaid cross-sector costs (non-MRT program investments, and alternative setting utilization costs) were included, Treatment participants demonstrated greater overall spending decreases than did Comparison, for a relative savings of about \$7,000,000, or about \$3,500 per person.
 - » These full-group savings appear to be driven particularly by decreased usage of other settings in the post-period for Treatment clients. While days in setting remained steady or increased for Comparison clients, days decreased for Treatment clients, resulting in huge cost savings sufficient, when coupled with the Medicaid claim savings seen, to overcome the sizeable program investment.

- » Further, Treatment clients in the two highest pre-period spending deciles showed greater decreases than did their Comparison counterparts, demonstrating that the overall treatment effect seen is likely driven by these pre-period high spenders.

Cost Categories:	Treatment Group		Comparison Group		Total Spending Difference	Per-Person Difference
	Pre-Period	Post-Period	Pre-Period	Post-Period		
Investments:						
Total Program Service & Operating costs, Development Costs	\$0	\$31,019,705	\$0	\$0	\$31,019,705	\$15,228
Outcomes:						
Medicaid Claims	\$69,609,598	\$55,712,469	\$72,981,851	\$65,447,946	-\$6,363,224	-\$3,124
Inpatient Psychiatric stays	\$2,093,518	\$1,145,641	\$5,481,653	\$4,602,602	-\$68,826	-\$34
OMH Residential stays	\$24,648,016	\$6,002,159	\$10,384,053	\$14,383,689	-\$22,645,494	-\$11,117
Homeless Shelter stays	\$11,393,300	\$1,864,100	\$5,440,300	\$4,919,900	-\$9,008,800	-\$4,423
Total Costs:	\$107,744,432	\$95,744,074	\$94,287,858	\$89,354,138	-\$7,066,638	-\$3,469

- However, when Medicaid program costs versus Medicaid claim costs alone were first examined for Treatment clients, the claim costs declined by about \$6,800 per person, which was insufficient to balance out the high costs of providing MRT-SH housing and services (about \$15,000 per person). This resulted in a significant spending increase if only Medicaid costs and savings are considered, highlighting the importance of examining cross-sector costs as well.
 - » Treatment clients in the highest pre-period spending decile did show a significant spending decrease, likely due to their high Medicaid claim cost savings, though no other deciles demonstrated such a result.
- The pre- and post-period differences in total Medicaid spending within the Treatment group were then compared to the differences for the Comparison group, to determine whether the Medicaid cost of the MRT-SH programs was significantly less than the cost of “treatment as usual.” While Treatment clients demonstrated a greater Medicaid claim spending decrease than did Comparison clients, once program costs were included, Medicaid-related spending still significantly increased for the Treatment group but decreased for the Comparison.
- Both the Olmstead Housing Subsidy program and OPWDD Rental Assistance program demonstrated significant Medicaid claim cost savings one and two years after enrollment. In both cases, savings were particularly driven by decreases in “other” service spending; OPWDD also showed notable decreases in nursing home-related spending.

CONCLUSIONS

The overall treatment effects seen represent a promising result of MRT-SH interventions: Treatment clients demonstrate greater cross-sector cost savings in the first year after MRT-SH enrollment than do their matched Comparison counterparts. Consistent with previous reports, Treatment clients demonstrated greater Medicaid claim spending decreases than did Comparison clients. But as MRT-SH programs represent costly interventions, with high annual service and operating costs and sizeable development investments, examination of Medicaid spending changes alone is insufficient to overcome this spending. But when non-Medicaid cross-sector costs were also examined, Treatment participants demonstrated greater overall spending decreases than did Comparison participants, for a relative savings of about \$7 million, or about \$3,500 per person.

These decreases are likely driven by clients who were particularly high utilizers before enrollment, and likely stem from decreases in Medicaid inpatient, nursing home, and other service category spending, and decreases in utilization of other settings (inpatient psychiatric centers, OMH residential facilities, and homeless shelters, all of which are quite costly).

As such, participation in a supportive environment, combined with enrollment in Health Homes or Medicaid managed care, may lead to a more efficient use of health care resources, as well as societal resources in general.

Introduction

This report details Medicaid cost changes associated with enrollment in programs sponsored by the New York State Medicaid Redesign Team's Supportive Housing Initiative (MRT-SH), including a summary of these projects and the full cross-sector cost characteristics of the people enrolled versus a comparison group of people who were similar to MRT-SH clients but were not enrolled. For each included MRT-SH participant, cost data are presented from one year before participant enrollment (defined here as the pre-period) through the first year post-enrollment (the post-period); for each included Comparison participant, cost data are presented for a similar two-year timespan. Cost data include Medicaid claim spending, investments into MRT-SH supportive housing (both MRT and non-MRT development costs, and program service and operating costs), and other cross-sector spending (utilization of inpatient psychiatric centers, Office of Mental Health (OMH) residential settings, and homeless shelters). The goal of the analysis is to present a comparison between overall spending before and after MRT-SH program enrollment for enrolled clients versus similar but not enrolled Medicaid users.¹

Additionally, pre-post analyses are presented for participants in Office for People with Developmental Disabilities (OPWDD) Rental Assistance and Olmstead Housing Subsidy programs using an extended two-year post-period, where available.

This report is based on the clients who had enrolled in these programs through September 2016. Medicaid beneficiaries move in and out of eligibility regularly. Therefore, this analysis is accurate for the participants in the sample; changes in program targeting may shift the outcomes seen. These descriptive analyses are based on a small panel of enrollees, and future estimates will depend in part on the clinical characteristics of new enrollees in these programs.

GOALS OF THE MRT-SH INITIATIVE

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

Studies have shown the powerful effects of social determinants of health, such as safe housing, nutrition, and education. However, the public spending dedicated to these social determinants is small relative to national health care spending overall.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 services⁴. 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.

INCLUDED MRT-SH PROJECTS

While MRT-SH initiatives include over 50 capital projects and 20 rental subsidy and supportive services programs and pilots, not all programs were appropriate to include in this comparison group testing. **Table 1** below shows the programs that are included in the main cost study in the body of this report. Supportive housing enrollment data for each MRT

¹ Note that for participants who are dually eligible for Medicaid and Medicare, Medicare costs are not included in the analysis.

² Bradley EH, Elkins BR, Herrin J, Elbel B. Health and social services expenditures: associations with health outcomes. *BMJ Quality & Safety*. 2011;20(10):826-831.

³ Stanton MW, Rutherford MK. The high concentration of U.S. health care expenditures. Rockville (MD): Agency for Healthcare Research and Quality; 2005. Research in Action Issue 19. AHRQ Pub. No. 06-0060.

⁴ Doran KM, Misa EJ, Shah NR. Housing as Health Care – New York's Boundary-Crossing Experiment. *New England Journal of Medicine*. 2013;369:2374-2377.

supportive housing participant included in this analysis is based on program records.⁵ Medicaid spending is based on Medicaid Data Warehouse (MDW) information for dates of service through 6/9/2019.⁶

Table 1. Summary characteristics of MRT Supportive Housing projects included in Cost 2 Volume 2 analyses

Program	Population Served	Number of People included in Cost 3 Report
All Included Treatment Clients		2,037
Department Of Health – AIDS Institute		
AIDS Institute Services & Subsidies	HIV-positive adults living outside NYC, often referred by Health Homes	117
AIDS Institute Pilot	Homeless and unstably housed Health Home-eligible individuals in New York City who were diagnosed with HIV but did not qualify for other existing programs	13
Homes and Community Renewal (HCR): Capital		
East 99th Street	Physically disabled adults who did not qualify for existing New York City SH programs	107
3361 Third Ave		27
Boston Road	Chronically homeless single adults who suffer from a serious and persistent mental illness or who are diagnosed as mentally ill and chemically addicted	58
Norwood Terrace		28
VOA Creston Avenue		17
Office of Temporary and Disability Assistance (Homeless Housing and Assistance Program Capital)		
Opportunities for Broome	Chronically homeless single adults who are recovering from drug and/or alcohol abuse or have a mental illness or other disability	9
Son House	Chronically homeless single adults who have a documented disability	23
Hope Gardens	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	13
Evergreen Loft Apartments	Homeless adults who are living with HIV/AIDS, have a disabling health condition, and/or are physically disabled	12
Office of Temporary and Disability Assistance (Other)		
Homeless Senior and Disabled Placement Program	Health Home-eligible SSI recipients living in New York City homeless shelters	146
Office of Mental Health		
Rental Subsidies - Brooklyn	Single, Health Home eligible adults with a serious mental illness who either live in Brooklyn, are referred by a Brooklyn-based Health Home, reside in an OMH-operated residential program, or are discharged from an Article 28 or Article 31 hospital. Individuals must also be unstably housed or be individuals for whom housing would assist in a hospital diversion	290
Rental Subsidies - Statewide	Single, Health Home-eligible adults with a serious mental illness who are either referred by a Health Home, reside in an OMH Psychiatric Center or OMH-operated residential program, or are discharged from an Article 28 or Article 31 hospital. Individuals must also be unstably housed or be individuals for whom housing would assist in a hospital diversion	415
Office of Alcoholism and Substance Abuse Services		
OASAS Rental Subsidies Statewide	Single adults with a substance use disorder who are homeless, unstably housed, or at risk of homelessness; are Medicaid eligible; and meet frequent utilizer criteria	436

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

⁶ Data was extracted on 12/9/2019.

Program	Population Served	Number of People included in Cost 3 Report
Department Of Health – Office of Health Insurance Programs		
Health Homes Supportive Housing Program	Homeless individuals that are enrolling or enrolled in Health Homes	294
Nursing Home to Independent Living (Transitions)	Individuals who are elderly or physically disabled, homeless or transitioning out of a skilled nursing facility with the program's assistance	32
Comparison Clients		2,037

ANALYSIS INCLUSION CRITERIA

All analyses presented below are for those programs that began enrolling participants prior to October 2016 and were determined to be appropriate for a comparison group approach. Participants were included for analysis provided that they were enrolled prior to October 2016, 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.

Additionally, clients were required to have at least one claim for a primary diagnosis of a serious mental illness (SMI), substance use disorder (SUD), HIV, or another chronic condition during their pre-period year, and to have at least some Medicaid claim cost in that year (i.e., at least some spending was required). Pre-period spending was capped at one million dollars, to depress the effects of extreme outlier clients.

Medicaid spending for clients meeting these criteria was then analyzed over the twelve months prior to program enrollment (the pre-period) and twelve months after program enrollment (the post-period). 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.

Comparison group participants were selected from a random sample of New York State Medicaid users who met these same coverage criteria and who had at least one claim for a primary diagnosis of an SMI, SUD, HIV, or another chronic condition during their pre-period year between 2011 and 2016; as with the Treatment group, all clients were required to have some Medicaid spending in their pre-period year that was capped at one million dollars. A matched set of Comparison clients was then selected from this sample using a propensity score matching approach; see Comparison Group report for more details.



Methodology

2015 was used as the standard year; all costs were adjusted for inflation and set to 2015 dollars.⁷

MDW fee-for-service claims (excluding capitation payments) and managed care plan reported (encounter) data, pulled on 12/9/2019 (thus valid through 6/9/2019)⁸, were used to calculate pre- and post-period Medicaid claim costs. For program participants who are dually eligible for Medicare and Medicaid, only Medicaid costs are included in the analysis. These costs were thus in a per-person, per-year format.

Investments into supportive housing were determined by examination of disbursement records provided by the NYS Department of Health, including monthly budgets and annual program submissions through 2017. Expenditures were categorized as *service and operating funds* or *development costs*.

Service and operating funds were the costs of implementing the services provided by these programs. Such expenses could include rent subsidy payments, counselor services, utilities costs, or program administrative costs; as such, both direct and indirect costs were included, as these reflected total money spent. Information was included for fiscal years 2012–2013 through 2016–2017, based on years when any clients were served by the program and through the last available client entry lists. When only one year of expenditure information was available, the amount was adjusted for inflation and used for multiple years of operation. For East 99th Street, service costs were estimated based on the 2015 HUD fair-market rates for the New York City metropolitan area for studio and one-bedroom apartments, as available in the building.⁹

Development costs were the monies needed to purchase or mortgage a building or set of apartments. These funds could come from MRT allocations, or from external sources (as in the case of the HHAP Capital programs, which were funded by MRT and other, often local, sources). Cash development costs reflect money spent in full at the time of disbursement. SHOP development costs reflect money budgeted for these developments, but planned to be spent over time, with interest (similar to a mortgage). As such, cash costs were simply adjusted for inflation to 2015 dollars, but SHOP costs were entered into an amortization schedule calculator to determine final total money to be disbursed.¹⁰

Investments were then annualized into per-person, per-year costs. Service and operating costs were divided by the total number of participants served by the program, and the average length of stay of each client. Development costs were divided by the total number of clients served, then by 30 years (to estimate the lifespan of the building).

Three types of MRT-SH projects were considered. One group (including the AIDS Institute, OTDA, OMH, OASAS, and OHIP programs) had only program service and operating costs: these programs had no development costs to consider, as no buildings were purchased. Instead, these programs gave rental subsidies to enrolled clients, and in some cases also provided other services. Second, the HCR Capital programs included both development and service and operating costs; in these cases, buildings were purchased or renovated, and program services delivered, funded solely by MRT-SH funds. Finally, the HHAP Capital programs also included both development and service and operating costs, but the development money was from both MRT-SH and other sources. As such, when only Medicaid spending is considered, these “other” development costs are not included, but they are included in the full cost-benefit analyses. However, as the Treatment and Comparison groups were created to be matched across all included participants at all included programs, these three program types were analyzed together; no analyses separate out individual MRT-SH programs or subtypes of programs.

7 See: https://www.bls.gov/data/inflation_calculator.htm. Costs in 2012 were multiplied by 1.04; 2013 by 1.02; 2014 by 1.00; 2015 by 1.00; 2016 by 0.99; 2017 by 0.97; and 2018 by 0.95.

8 Client claims were assumed to be complete within six months. As such, a six-month claims lag was instituted, wherein data pulled on 12/9/2019 was assumed to be complete for services provided through 6/9/2019.

9 See: https://www.huduser.gov/portal/datasets/fmr/fmrs/FY2015_code/2015summary.odn. The East 99th Street program includes 82 studio apartments, at \$1,196 per month, and 93 one-bedroom apartments, at \$1,249 per month. These costs were then multiplied by 12 to find the annual service and operating costs.

10 See: <https://www.amortization-calc.com/>. The loan amount was the amount of money budgeted, adjusted for inflation to 2015 dollars; the loan term was set at 30 years; and the interest rate was set at 3%. The resultant monthly payment was then multiplied by 360 to find the final amount of money paid after 30 years, or the final total money to be disbursed.

Cross-sector costs were calculated by determining the number of days each participant spent in each setting, then multiplying that number by a daily rate. While admission into a homeless shelter or OMH facility (state psychiatric hospital, including any level of care, or OMH community residence) during the pre-period was included as a covariate in the modeling process, these items were not required for matching, and also did not consider stays in these settings that started before the pre-period year but extended into it. Here, number of days in each of these settings during the pre-period and post-period were considered. Daily rates for adult inpatient stays and state-operated community residences were determined from 2015–16 setting rate information obtained from OMH. As such, the number of days in each period for which each participant had a stay record in the Mental Health Automated Record System (MHARS) dataset was multiplied by \$871.21, and the number of days for which each participant had a stay record in the Child and Adult Integrated Reporting System (CAIRS) dataset was multiplied by \$360.62. Homeless shelter daily rates were calculated using the Office of Children and Family Services (OCFS) 2015 rate for domestic violence shelters across New York State, a rate which some shelters use to set their own budgets.¹¹ As such, the number of days in each period for which each participant had an HMIS stay record was multiplied by \$100. These costs were thus in a per-person, per-year format. As these costs were not part of Medicaid records or MRT-SH funds, they are not considered in Medicaid-only analyses, but are included in the full cost-benefit analyses.

Note that while Cost 2, Volume 2 demonstrated that nursing homes were also an expensive setting whose use particularly declined among Treatment clients, these stays were captured by Medicaid claim analyses; thus, no separate daily-rate computations were needed to assess the monetary impact of these stays.

Pre- and post-period spending was then computed and compared between the Treatment and Comparison group participants. A two (time: pre-period, post-period) by two (group: Treatment, Comparison) repeated measures ANOVA was then performed to examine the main effects of these factors and determine whether there was an interaction between time and group on changes in overall expenditures, and thus whether the Treatment group showed a greater mean spending decrease (i.e., greater savings) than the Comparison group. Both time and group were treated as within-subjects factors in these main analyses, as Treatment and Comparison participants were matched on propensity scores and thus drawn from the same underlying distribution. Differences between groups within a time point, within a group between time points, and between the differences between time points, were compared using paired-samples t-tests. These analyses were performed for the full Treatment versus Comparison groups, and within each Medicaid claim spending decile.

Expected Outcomes

Pre- and post-period spending, both specific to Medicaid and cross-sector, was computed and compared for Treatment and matched Comparison participants. Whether, after including the cost of the intervention (development costs, and program service and operating costs) and cross-sector costs, Treatment clients demonstrated *increased* total spending relative to Comparison clients, *decreased* total spending, or relative *cost neutrality* was examined.

Pre-period Medicaid claim spending was included as a factor in the propensity score matching process undertaken, and selected matched participants were required to be within the same pre-period spending decile. As such, Treatment and Comparison participants were not expected to significantly differ in pre-period Medicaid claim spending, as established in the Cost 2, Volume 2 report. Further, Cost 2, Volume 2 demonstrated that Treatment clients showed significantly greater Medicaid claim savings in their post-period than Comparison clients; this interaction was preserved here.

Importantly, only Treatment clients had program service and operating and development costs, and only in their post-period year. As Comparison clients did not receive MRT-SH treatment, they necessarily had no such treatment expenses. While significant Medicaid claim savings were evident, it was considered unlikely for the approximately \$3,200 per-person differential found in Cost 2, Volume 2 to be able to outweigh the high per-person cost of the intervention itself, even when only Medicaid investments were considered.

However, cross-sector costs were also considered. Given their inclusion in the propensity score modeling process, Treatment and Comparison clients were expected to have somewhat similar rates of pre-period setting use (even if not exactly matched), and thus similar numbers of days-in-setting and similar pre-period costs. However, significant declines in number of days in each setting was expected for Treatment clients after enrollment in MRT-SH, while usage for Comparison clients was expected to remain steady through the periods. The high daily rates of these settings could thus result in significantly greater per-person costs for Comparison clients, which could balance out the expenses of the MRT-SH programs themselves.

Simple pre-post comparisons were also conducted for eligible participants in OPWDD and Olmstead Housing Subsidy programs. For Olmstead, analyzed MRT-SH clients were expected to demonstrate significant overall savings in Medicaid claim costs from the pre- to the post-period years. For OPWDD, the Medicaid claim savings seen in Cost 2, Volume 1 were expected to continue when a second post-period year was examined for a larger sample.



Results

TOTAL INVESTMENTS INTO MRT-SH PROGRAMS

The total investment into MRT-SH programs, on a per-client basis, was first considered (see **Table 2**). As noted in the Methodology section, costs were considered from 2012 (e.g., the earliest point after which the included programs began serving clients) through 2017.

Program service and operating costs were calculated from examination of disbursement records provided by the New York State Department of Health. Costs were based on years when any clients were served by the program, through the last available client entry lists (e.g., fiscal year 2016–2017). These annual costs were adjusted for inflation within each year, summed across years, then divided by the total number of clients served and average stay length per client (in years) to calculate an average cost per person per year (PPPY).

Development costs were also calculated from examination of disbursement records. Cash development costs were adjusted for inflation. SHOP development costs were adjusted for inflation, entered into an amortization schedule calculator to determine monthly payments, and multiplied by 360. Development costs were then divided by the total number of clients served, and by 30 years (i.e., the estimated lifespan of the building), to again calculate an average cost per person per year (PPPY).

Table 2. Investments into Supportive Housing, by Program, with Average Cost PPPY

Program & Funding Type	Cost Type	Total Money Disbursed	Total Money Disbursed, in 2015 dollars	Total N Clients Served	Average Length of Stay, in Years	Average Cost Per Person Per Year, in 2015 dollars
MRT-SH Service & Operating Funds Only						
AIDS Institute: Services & Subsidies	Service & Operating Funds	\$4,764,149	\$4,711,504	439	1.22	\$8,797
AIDS Institute: Pilot	Service & Operating Funds	\$1,488,959	\$1,461,030	35	0.94	\$44,408
OTDA: Homeless Senior & Disabled Placement	Service & Operating Funds	\$4,027,295	\$3,931,377	234	1.77	\$9,492
OMH: Rental Subsidies-Statewide & Brooklyn	Service & Operating Funds	\$47,354,002	\$47,038,723	1240	2.25	\$16,860
OASAS Rental Subsidies	Service & Operating Funds	\$18,404,584	\$18,222,252	690	1.69	\$15,627
OHIP: Health Homes Supportive Housing Pilot	Service & Operating Funds	\$5,296,519	\$5,177,166	565	1.22	\$7,511
OHIP: Nursing Home to Independent Living	Service & Operating Funds	\$16,047,000	\$15,813,050	347	1.15	\$39,627
HCR Capital (Only MRT Funds)						
East 99th Street	MRT Development: Cash	\$7,435,074	\$7,435,074	192	30	\$1,291
	MRT Development: SHOP	\$66,995,773	\$66,995,773	192	30	\$11,631
	Service & Operating Funds	\$6,232,404	\$6,144,767	192	2.98	\$10,740
3361 Third Avenue	MRT Development: Cash	\$4,250,000	\$4,250,000	38	30	\$3,728
	MRT Development: SHOP	\$0	\$0	38	30	\$0
	Service & Operating Funds	\$937,620	\$919,423	38	2.28	\$10,612

Program & Funding Type	Cost Type	Total Money Disbursed	Total Money Disbursed, in 2015 dollars	Total N Clients Served	Average Length of Stay, in Years	Average Cost Per Person Per Year, in 2015 dollars
Boston Road	MRT Development: Cash	\$6,687,828	\$6,687,828	94	30	\$2,372
	MRT Development: SHOP	\$432,364	\$432,364	94	30	\$153
	Service & Operating Funds	\$1,801,976	\$1,762,991	94	1.78	\$10,537
Norwood Terrace	MRT Development: Cash	\$3,249,997	\$3,217,497	58	30	\$1,849
	MRT Development: SHOP	\$6,010,391	\$6,010,391	58	30	\$3,454
	Service & Operating Funds	\$1,049,297	\$1,017,818	58	1.97	\$8,908
VOA Creston	MRT Development: Cash	\$2,625,000	\$2,625,000	21	30	\$4,167
	MRT Development: SHOP	\$0	\$0	21	30	\$0
	Service & Operating Funds	\$1,577,217	\$1,554,317	21	2.9	\$25,522
HHAP Capital (MRT+Other Funds)						
Son House/Providence Housing	MRT Development Cost	\$198,957	\$202,936	45	30	\$150
	Other Development Cost	\$2,392,748	\$2,440,603	45	30	\$1,808
	Service & Operating Funds	\$501,860	\$492,149	45	1.78	\$6,144
Opportunities for Broome	MRT Development Cost	\$3,482,479	\$3,552,129	30	30	\$3,947
	Other Development Cost	\$88,000	\$89,760	30	30	\$100
	Service & Operating Funds	\$236,375	\$231,345	30	2.08	\$3,707
Hope Gardens	MRT Development Cost	\$3,655,438	\$3,655,438	32	30	\$3,808
	Other Development Cost	\$737,375	\$737,375	32	30	\$768
	Service & Operating Funds	\$2,077,829	\$2,036,168	32	1.68	\$37,875
Evergreen Health Services	MRT Development Cost	\$1,500,000	\$1,500,000	29	30	\$1,724
	Other Development Cost	\$14,991,293	\$14,991,293	29	30	\$17,231
	Service & Operating Funds	\$842,189	\$825,130	29	1.44	\$19,759

Per-person per-year spending varied widely between programs, from about \$8,000 PPPY through about \$44,000 PPPY. However, the programs served a wide variety of groups and populations, and included a variety of services and programs; as such, this variability is likely reflective of programming differences as well as simple efficiencies.

TREATMENT GROUP MEDICAID SPENDING CHANGES

The pre- and post-period differences in total *Medicaid* spending within the Treatment group were then examined to determine whether the MRT-SH programs demonstrate savings in Medicaid claims commensurate with the MRT investment into the programs (see **Table 3**).

Medicaid claim spending was calculated using data pulled from the MDW (see Cost 2, Volume 2 for more information on claim calculations). No client had any pre-period program costs; as such, all pre-period program investments were set to \$0. Post-period costs were calculated by multiplying the previously calculated PPPY costs in each appropriate category by the number of Treatment clients selected and matched after the propensity score matching process. Non-MRT-SH development costs were not included in these analyses.

Table 3. Treatment Group Medicaid Investment vs Claims Analysis by Program, with Average Cost Difference PPPY

Program & Funding Type	Cost Category	N Clients in Study	Pre	Post	Total Cost Difference (Post-Pre)	Per-Person Difference in Total Cost
Medicaid Program Investments						
MRT-SH Service & Operating Funds Only						
AIDS Institute: Services & Subsidies	Service & Operating Funds	117	\$0	\$1,029,250	\$1,029,250	\$8,797
AIDS Institute: Pilot	Service & Operating Funds	13	\$0	\$577,307	\$577,307	\$44,408
OTDA: Homeless Senior & Disabled Placement	Service & Operating Funds	146	\$0	\$1,385,825	\$1,385,825	\$9,492
OMH: Rental Subsidies-Statewide & Brooklyn	Service & Operating Funds	705	\$0	\$11,886,129	\$11,886,129	\$16,860
OASAS Rental Subsidies	Service & Operating Funds	436	\$0	\$6,813,225	\$6,813,225	\$15,627
OHIP: Health Homes Supportive Housing Pilot	Service & Operating Funds	294	\$0	\$2,208,163	\$2,208,163	\$7,511
OHIP: Nursing Home to Independent Living	Service & Operating Funds	32	\$0	\$1,268,056	\$1,268,056	\$39,627
HCR Capital (Only MRT Funds)						
East 99th Street	MRT Development: Cash	107	\$0	\$138,117	\$138,117	\$1,291
	MRT Development: SHOP	107	\$0	\$1,244,540	\$1,244,540	\$11,631
	Service & Operating Funds	107	\$0	\$1,149,137	\$1,149,137	\$10,740
3361 Third Avenue	MRT Development: Cash	27	\$0	\$100,658	\$100,658	\$3,728
	MRT Development: SHOP	27	\$0	\$0	\$0	\$0
	Service & Operating Funds	27	\$0	\$286,524	\$286,524	\$10,612
Boston Road	MRT Development: Cash	58	\$0	\$137,551	\$137,551	\$2,372
	MRT Development: SHOP	58	\$0	\$8,893	\$8,893	\$153
	Service & Operating Funds	58	\$0	\$611,125	\$611,125	\$10,537
Norwood Terrace	MRT Development: Cash	28	\$0	\$51,776	\$51,776	\$1,849
	MRT Development: SHOP	28	\$0	\$96,719	\$96,719	\$3,454
	Service & Operating Funds	28	\$0	\$249,422	\$249,422	\$8,908
VOA Creston	MRT Development: Cash	17	\$0	\$70,833	\$70,833	\$4,167
	MRT Development: SHOP	17	\$0	\$0	\$0	\$0
	Service & Operating Funds	17	\$0	\$433,882	\$433,882	\$25,522
HHAP Capital (MRT+Other Funds, only Medicaid examined here)						
Son House/Providence Housing	MRT Development Cost	23	\$0	\$3,457	\$3,457	\$150
	Service & Operating Funds	23	\$0	\$141,316	\$141,316	\$6,144
Opportunities for Broome	MRT Development Cost	9	\$0	\$35,521	\$35,521	\$3,947
	Service & Operating Funds	9	\$0	\$33,367	\$33,367	\$3,707

Program & Funding Type	Cost Category	N Clients in Study	Pre	Post	Total Cost Difference (Post-Pre)	Per-Person Difference in Total Cost
Hope Gardens	MRT Development Cost	13	\$0	\$49,501	\$49,501	\$3,808
	Service & Operating Funds	13	\$0	\$492,377	\$492,377	\$37,875
Evergreen Health Services	MRT Development Cost	12	\$0	\$20,690	\$20,690	\$1,724
	Service & Operating Funds	12	\$0	\$237,106	\$237,106	\$19,759
Total Medicaid Program Investments			\$0	\$30,760,465	\$30,760,465	\$15,101
MRT-SH Service & Operating Funds Only						
AIDS Institute: Services & Subsidies	Medicaid Claims	117	\$4,837,180	\$5,505,844	\$668,664	\$5,715
AIDS Institute: Pilot	Medicaid Claims	13	\$475,823	\$493,669	\$17,846	\$1,373
OTDA: Homeless Senior & Disabled Placement	Medicaid Claims	146	\$3,696,546	\$4,103,255	\$406,710	\$2,786
OMH: Rental Subsidies-Statewide & Brooklyn	Medicaid Claims	705	\$22,027,934	\$16,826,833	-\$5,201,100	-\$7,377
OASAS Rental Subsidies	Medicaid Claims	436	\$17,043,541	\$12,252,886	-\$4,790,655	-\$10,988
OHIP: Health Homes Supportive Housing Pilot	Medicaid Claims	294	\$10,254,545	\$8,170,792	-\$2,083,753	-\$7,088
OHIP: Nursing Home to Independent Living	Medicaid Claims	32	\$2,751,294	\$1,791,084	-\$960,210	-\$30,007
HCR Capital (Only MRT Funds)						
East 99th Street	Medicaid Claims	107	\$3,933,859	\$2,716,580	-\$1,217,279	-\$11,376
3361 Third Avenue	Medicaid Claims	27	\$565,285	\$428,126	-\$137,159	-\$5,080
Boston Road	Medicaid Claims	58	\$1,137,820	\$1,349,960	\$212,140	\$3,658
Norwood Terrace	Medicaid Claims	28	\$1,050,162	\$717,366	-\$332,795	-\$11,886
VOA Creston	Medicaid Claims	17	\$416,761	\$271,523	-\$145,238	-\$8,543
HHAP Capital (MRT+Other Funds)						
Son House/Providence Housing	Medicaid Claims	23	\$381,649	\$319,839	-\$61,810	-\$2,687
Opportunities for Broome	Medicaid Claims	9	\$143,866	\$104,786	-\$39,080	-\$4,342
Hope Gardens	Medicaid Claims	13	\$328,601	\$237,432	-\$91,169	-\$7,013
Evergreen Health Services	Medicaid Claims	12	\$564,732	\$422,492	-\$142,240	-\$11,853
Total Medicaid Claim Costs			\$69,609,598	\$55,712,469	-\$13,897,129	-\$6,822
Total Medicaid Costs:			\$69,609,598	\$92,065,444	\$22,455,846	\$8,279

Medicaid MRT-SH program investment thus totaled about \$30.7 million dollars, with the average Medicaid program investment per person about \$15,000. While Medicaid claim costs declined by about \$6,800 per person (consistent with the figure from Cost Report 2, Volume 2), this amount was insufficient to “cover” the Medicaid costs of providing housing and services. A paired-samples t-test demonstrated that this cost difference represented a significant increase in total Medicaid spending from the pre- to the post-periods for Treatment clients ($t(1,2036)=-10.391, p<0.001$).

Treatment Group Medicaid Spending Changes by Decile

These Medicaid investment-versus-claim cost changes were then investigated within each spending decile. Notably, all deciles except Decile 10 demonstrated significant increases in spending, where total Medicaid spending increased from the pre- to the post-periods. As demonstrated in Cost 2, Volume 2, most deciles demonstrated increases in Medicaid claim costs across this interval, making Medicaid-based savings impossible to achieve; as such, these results are not surprising.

However, within Decile 10, the decrease in claim spending was significantly greater than the investment into the program ($t(1,255)=7.288, p<0.001$). Decile 10 demonstrated significant Medicaid claim cost savings in Cost 2, Volume 2 (approximately \$45,600 per person); this decrease was thus sufficient to overcome the investment into the program (see **Table 3A**).

Table 3A. Treatment Group Medicaid Spending Changes by Decile

Decile	N clients	Total Medicaid Costs, Pre-Period	Total Medicaid Costs, Post-Period	Total Cost Difference (Post-Pre)	Per-Person Difference in Total Cost	p-value
1	25	\$21,371	\$561,151	\$539,780	\$21,591	***
2	43	\$81,750	\$1,074,445	\$992,694	\$23,086	***
3	56	\$185,672	\$1,258,620	\$1,072,948	\$19,160	***
4	116	\$568,867	\$3,133,634	\$2,564,767	\$22,110	***
5	143	\$1,035,238	\$3,539,118	\$2,503,879	\$17,510	***
6	178	\$1,886,433	\$5,493,626	\$3,607,193	\$20,265	***
7	295	\$4,682,195	\$9,735,432	\$5,053,237	\$17,130	***
8	413	\$10,740,820	\$16,446,889	\$5,706,069	\$13,816	***
9	512	\$23,567,256	\$25,824,569	\$2,257,313	\$4,409	**
10	256	\$26,839,996	\$19,405,451	-\$7,434,545	-\$29,041	***

TREATMENT VERSUS COMPARISON MEDICAID SPENDING CHANGES

The pre- and post-period differences in total Medicaid spending within the Treatment group were then compared to the differences for the Comparison group, to determine whether the Medicaid cost of the MRT-SH programs was significantly less than the cost of “treatment as usual.” As no Comparison group clients enrolled in any MRT-SH programs, all program investments were set to \$0. Medicaid claims per person per year were summed within each group and time window. As demonstrated in Cost 2, Volume 2, Medicaid claims showed a significant time by group interaction, where Treatment clients demonstrated a greater spending decrease than did Comparison (mean difference = -\$3,123; $F(1,2036)=8.122, p=0.004$). However, as shown within the Treatment group, this claim decrease was not sufficient to balance out the significant investments into the MRT-SH programs (see **Table 4**).

Table 4. Treatment vs Comparison Group Medicaid Spending Analysis

Cost Categories:	Treatment Group		Comparison Group		Total Difference (Treatment Post-Pre - Comparison Post-Pre)	Average Difference (Treatment Post-Pre - Comparison Post-Pre, /2037)
	Pre-Period	Post-Period	Pre-Period	Post-Period		
Investments						
MRT Service & Operating Costs (Annual)	\$0	\$28,802,210	\$0	\$0	\$28,802,210	\$14,140
MRT Development Costs (Annualized)	\$0	\$1,958,255	\$0	\$0	\$1,958,255	\$961
Total Investments	\$0	\$30,760,465	\$0	\$0	\$30,760,465	\$15,101
Outcomes						
Medicaid Claims	\$69,609,598	\$55,712,469	\$72,981,851	\$65,447,946	-\$6,363,224	-\$3,123
Total Costs:	\$69,609,598	\$86,472,934	\$72,981,851	\$65,447,946	\$24,397,241	\$11,977

A two (time: pre, post) by two (group: Treatment, Comparison) Repeated Measures ANOVA demonstrated significant main effects of time ($F(1,2036)=13.583, p<0.001$) and group ($F(1,2036)=40.075, p<0.001$), but most importantly a significant interaction between these two factors ($F(1,2036)=118.310, p<0.001$), where Medicaid-related spending increased for the Treatment group but decreased for the Comparison group.

Treatment versus Comparison Group Medicaid Spending Changes by Decile

These Medicaid investment-versus-claim cost changes were then investigated within each spending decile using the same two by two Repeated Measures ANOVA design. In almost all cases, both groups demonstrated increases in spending, though with the Treatment group demonstrating greater increases than the Comparison group. Again, this pattern is consistent with the increased Medicaid claims for most deciles seen in Cost 2, Volume 2. Decile 10 was the only decile to not show such an interaction; in this case, Treatment and Comparison clients demonstrated similar decreases in spending across the interval (interaction $F(1,255)<1, p>0.2$; see **Table 4A**).

Table 4A. Treatment versus Comparison Group Medicaid Spending Changes by Decile

Decile	N clients	Treatment Group		Comparison Group		Total Difference (Treatment Post-Pre - Comparison Post-Pre)	Average Difference (Treatment Post-Pre - Comparison Post-Pre, /2037)	Interaction p-value
		Pre-Period	Post-Period	Pre-Period	Post-Period			
1	25	\$21,371	\$561,151	\$17,063	\$122,658	\$434,185	\$17,367	***
2	43	\$81,750	\$1,074,445	\$76,183	\$211,669	\$857,208	\$19,935	***
3	56	\$185,672	\$1,258,620	\$168,272	\$266,798	\$974,421	\$17,400	***
4	116	\$568,867	\$3,133,634	\$557,102	\$1,252,977	\$1,868,892	\$16,111	***
5	143	\$1,035,238	\$3,539,118	\$1,022,284	\$1,772,611	\$1,753,552	\$12,263	***
6	178	\$1,886,433	\$5,493,626	\$1,848,190	\$2,436,965	\$3,018,418	\$16,957	***
7	295	\$4,682,195	\$9,735,432	\$4,779,693	\$5,313,445	\$4,519,486	\$15,320	***
8	413	\$10,740,820	\$16,446,889	\$10,595,470	\$10,671,979	\$5,629,560	\$13,631	***
9	512	\$23,567,256	\$25,824,569	\$23,631,240	\$21,987,623	\$3,900,929	\$7,619	**
10	256	\$26,839,996	\$19,405,451	\$30,286,355	\$21,411,222	\$1,440,589	\$5,627	n.s.

TREATMENT VERSUS COMPARISON TOTAL CROSS-SECTOR SPENDING CHANGES

The pre- and post-period differences in total spending, including both Medicaid and non-Medicaid spending, were then compared between the Treatment and Comparison groups to determine whether the total cost of the MRT-SH programs was significantly less than the cost of “treatment as usual.” As such, non-MRT development costs were included as investments, and cross-sector costs were calculated using daily rates multiplied by the number of days in setting in the pre- and post-periods.

A two (time: pre, post) by two (group: Treatment, Comparison) Repeated Measures ANOVA demonstrated significant main effects of time ($F(1,2036)=23.848, p<0.001$) and group ($F(1,2036)=17.456, p<0.001$), but most importantly a significant interaction between these two factors ($F(1,2036)=4.977, p=0.026$), where overall Treatment spending decreased more than did Comparison spending. As such, once cross-sector costs were taken into account, Treatment clients demonstrated a relative savings of about \$7,000,000, or about \$3,500 per person (see **Table 5**).

Table 5. Treatment versus Comparison Group Cross-Sector Spending Analysis

Cost Categories:	Treatment Group		Comparison Group		Total Difference (Treatment Post-Pre - Comparison Post-Pre)	Average Difference (Treatment Post-Pre - Comparison Post-Pre, /2037)
	Pre-Period	Post-Period	Pre-Period	Post-Period		
Investments						
All Service & Operating costs	\$0	\$28,802,210	\$0	\$0	\$28,802,210	\$14,140
MRT Development Costs	\$0	\$1,958,255	\$0	\$0	\$1,958,255	\$961
Other Development Costs	\$0	\$259,240	\$0	\$0	\$259,240	\$127
<i>Total Investments</i>	<i>\$0</i>	<i>\$31,019,705</i>	<i>\$0</i>	<i>\$0</i>	<i>\$31,019,705</i>	<i>\$15,228</i>
Outcomes						
Medicaid Claims	\$69,609,598	\$55,712,469	\$72,981,851	\$65,447,946	-\$6,363,224	-\$3,124
Inpatient Psychiatric Center	\$2,093,518	\$1,145,641	\$5,481,653	\$4,602,602	-\$68,826	-\$34
OMH Residential Settings	\$24,648,016	\$6,002,159	\$10,384,053	\$14,383,689	-\$22,645,494	-\$11,117
Homeless Shelter	\$11,393,300	\$1,864,100	\$5,440,300	\$4,919,900	-\$9,008,800	-\$4,423
<i>Total Outcomes</i>	<i>\$107,744,432</i>	<i>\$64,724,369</i>	<i>\$94,287,858</i>	<i>\$89,354,138</i>	<i>-\$38,086,343</i>	<i>-\$18,697</i>
Total Costs:	\$107,744,432	\$95,744,074	\$94,287,858	\$89,354,138	-\$7,066,638	-\$3,469

Further, the full-group relative savings found appears to be driven particularly by decreased usage of other settings in the post-period for Treatment clients. While days in setting, and thus total setting costs, increased (such as in OMH residential settings) or remained relatively steady (such as in inpatient psychiatric centers and homeless shelters) for Comparison clients, days in setting decreased for Treatment clients, particularly for OMH residential settings and homeless shelters (see **Table 5A**). Given the expense of these settings, such decreased utilization thus resulted in huge total and per-person cost savings, which was sufficient to overcome the sizeable program investment when coupled with the significant Medicaid claim savings also found.

Table 5A. Days in Setting by group, period.

Days in Setting Setting Type	Treatment Group		Comparison Group	
	Pre-Period	Post-Period	Pre-Period	Post-Period
Inpatient Psychiatric Center	2,403	1,315	6,292	5,283
OMH Residential Settings	68,349	16,644	28,795	39,886
Homeless Shelter	113,933	18,641	54,403	49,199

Treatment versus Comparison Group Medicaid Spending Changes by Decile

These cross-sector cost changes were then investigated within each spending decile using the same two by two Repeated Measures ANOVA design. For deciles 1 through 8, there was either no significant interaction (with both Treatment and Comparison client spending increasing similarly over the interval, see deciles 1, 2, 5, 6, and 8), or a significant interaction where Treatment spending increased more than Comparison spending (deciles 3, 4, and 7). However, deciles 9 and 10 demonstrated the opposite pattern: in decile 9, Treatment spending decreased while Comparison spending stayed relatively steady, demonstrating a significant effect of MRT-SH enrollment on overall cross-sector spending ($F(1,511)=3.978$,

$p < 0.001$). In decile 10, both Treatment and Comparison clients showed spending decreases, but this decrease was marginally greater for Treatment than Comparison clients, again demonstrating the impact of MRT-SH enrollment ($F(1,255)=3.249, p < 0.073$; see **Table 5B**). As such, the overall treatment effect seen is likely driven by the pre-period high spending clients, or the clients in deciles 9 and 10, similar to the effects seen in Cost 2, Volume 2.

Table 5B. Treatment versus Comparison Group Cross-Sector Spending Changes by Decile

Decile	N clients	Treatment Group		Comparison Group		Total Difference (Treatment Post-Pre - Comparison Post-Pre)	Average Difference (Treatment Post-Pre - Comparison Post-Pre, /2037)	Interaction p-value
		Pre-Period	Post-Period	Pre-Period	Post-Period			
1	25	\$312,352	\$570,551	\$57,763	\$171,958	\$144,003	\$5,760	n.s.
2	43	\$713,081	\$1,112,113	\$424,292	\$797,436	\$25,888	\$602	n.s.
3	56	\$805,599	\$1,533,086	\$223,832	\$334,519	\$616,800	\$11,014	***
4	116	\$1,857,060	\$3,423,379	\$1,172,751	\$1,789,107	\$949,964	\$8,189	*
5	143	\$2,700,234	\$3,917,919	\$1,929,908	\$3,016,571	\$131,022	\$916	n.s.
6	178	\$4,144,832	\$6,123,496	\$2,885,613	\$3,843,606	\$1,020,672	\$5,734	n.s.
7	295	\$8,022,292	\$11,209,078	\$7,595,040	\$9,217,204	\$1,564,623	\$5,304	*
8	413	\$15,539,619	\$18,234,521	\$15,225,716	\$16,007,209	\$1,913,409	\$4,633	n.s.
9	512	\$40,295,443	\$29,040,344	\$30,017,517	\$28,798,017	-\$10,035,599	-\$19,601	***
10	256	\$33,353,921	\$20,579,587	\$34,755,426	\$25,378,511	-\$3,397,419	-\$13,271	†



Extended Pre-Post Medicaid Claim Analyses for Selected Programs

Further comparisons of Medicaid claim spending before and after program enrollment were undertaken for two additional programs not included in any Comparison group analyses.

OLMSTEAD HOUSING SUBSIDY PROGRAM

Olmstead had previously been excluded from such pre-post analyses as they did not have any clients enrolled by September 2016; however, given the extended timeline of the project, a sufficient client population with a lengthy enough post-period was available at this point for further analyses. However, as no further client rosters were available, descriptions of enrollment duration could not be calculated.

- **Program Description:** Olmstead Housing Subsidy is a statewide rental subsidy and transitional housing support service program for Medicaid members who reside in a skilled nursing facility and have the ability to live safely in the community. The program helps address the needs of eligible Medicaid members in transitioning from skilled nursing facilities and obtaining housing in the community.
- **Population Served:** Individuals who are enrolled in Medicaid and have spent one hundred and twenty (120) consecutive days in a skilled nursing facility.
- **Program Start Date:** December 2016.
- **Enrollment:** 88 included in analysis; 68 had data from two years post enrollment available.
- **Comorbidities:** Included participants were most likely to have an other chronic condition or a serious mental illness (see **Table 6A**).
- **Care Coordination:** Care Coordination enrollment was relatively high among Olmstead clients: over half were enrolled in Medicaid Managed Care in the pre-period (a rate which rose in the first post-period year); about a quarter were enrolled in Health Homes; and almost half were dual Medicaid-Medicare eligible (see **Table 6B**).

Summary

Olmstead demonstrates significant overall cost savings in the post periods examined, for both one and two years after enrollment. In fact, cost savings actually increased in the second post-period year, demonstrating continued improvements in Medicaid savings over this period. Almost all of these savings come from decreases in nursing home spending and decreases in the "Other" service category. Hospital inpatient and outpatient services, pharmacy costs, physician services, and transportation categories also exhibited notable savings. No categories demonstrated significant post-period cost increases. A graphical depiction of the cost categories follows. These results indicate that cost savings in nursing home settings and other services drive overall cost savings for the program.

Table 6A. Comorbidity Distribution for Enrollees Analyzed

	Total Group (Post Year 1)	Percent of Total Group	Post Years 1 & 2	Percent of Subgroup
Serious Mental Illness	46	52%	40	59%
Substance Use Disorder	2	2%	1	1.5%
Other Chronic Condition	71	81%	55	81%
HIV	3	3%	3	4%
3 or more of the above	3	3%	3	4%
All 4 of the above	0	0%	0	0%

Table 6B. Care Coordination for Enrollees Analyzed

	Pre-Period Prevalence	Post Year 1 Prevalence	Post Year 2 Prevalence
Medicaid Managed Care Enrollment	56%	89%	0%
Health Homes Enrollment	27%	22%	0%
Dual Eligibility	47%	43%	0%

Table 6C. Pre-Post Medicaid Costs for Residents of Olmstead, by Category of Service

Service Classification/ Analysis Cohort	N	Pre-Period Total Cost	Post-Period Total Cost	Total Cost Difference	Mean Cost Difference	Median Cost Difference	Sign Test
Overall							
Pre vs. 1 Year Post (all)	88	\$8,442,984	\$2,606,629	-\$5,836,355	-\$66,322	-\$67,255	***
Pre vs. 1 Year Post	68	\$6,771,787	\$2,069,096	-\$4,702,691	-\$69,157	-\$68,451	***
Pre vs. 2 Years Post	68	\$6,771,787	\$0	-\$6,771,787	-\$99,585	-\$90,239	***
Clinic							
Pre vs. 1 Year Post	88	\$85,724	\$43,079	-\$42,645	-\$485	\$0	n.s.
Pre vs. 1 Year Post	68	\$7,119	\$28,030	\$20,912	\$308	\$0	n.s.
Pre vs. 2 Years Post	68	\$7,119	\$0	-\$7,119	-\$105	\$0	*
DME							
Pre vs. 1 Year Post	88	\$12,131	\$5,889	-\$6,243	-\$71	\$0	n.s.
Pre vs. 1 Year Post	68	\$10,475	\$5,298	-\$5,176	-\$76	\$0	n.s.
Pre vs. 2 Years Post	68	\$10,475	\$0	-\$10,475	-\$154	\$0	**
Emergency Department							
Pre vs. 1 Year Post	88	\$32,681	\$24,978	-\$7,703	-\$88	\$0	n.s.
Pre vs. 1 Year Post	68	\$26,057	\$21,672	-\$4,384	-\$64	\$0	n.s.
Pre vs. 2 Years Post	68	\$26,057	\$0	-\$26,057	-\$383	\$0	***
Health Home/Care Mgmt							
Pre vs. 1 Year Post	88	\$21,595	\$14,944	-\$6,651	-\$76	\$0	n.s.
Pre vs. 1 Year Post	68	\$13,290	\$13,212	-\$78	-\$1	\$0	n.s.
Pre vs. 2 Years Post	68	\$13,290	\$0	-\$13,290	-\$195	\$0	***
Hospital Inpatient							
Pre vs. 1 Year Post	88	\$996,367	\$539,657	-\$456,710	-\$5,190	\$0	*
Pre vs. 1 Year Post	68	\$860,083	\$372,208	-\$487,875	-\$7,175	\$0	**
Pre vs. 2 Years Post	68	\$860,083	\$0	-\$860,083	-\$12,648	\$0	***
Hospital Outpatient							
Pre vs. 1 Year Post	88	\$249,131	\$105,373	-\$143,757	-\$1,634	\$0	**
Pre vs. 1 Year Post	68	\$168,851	\$58,223	-\$110,628	-\$1,627	\$0	**
Pre vs. 2 Years Post	68	\$168,851	\$0	-\$168,851	-\$2,483	-\$149	***
Lab							
Pre vs. 1 Year Post	88	\$4,440	\$539	-\$3,902	-\$44	\$0	**
Pre vs. 1 Year Post	68	\$3,652	\$511	-\$3,140	-\$46	\$0	**
Pre vs. 2 Years Post	68	\$3,652	\$0	-\$3,652	-\$54	\$0	**

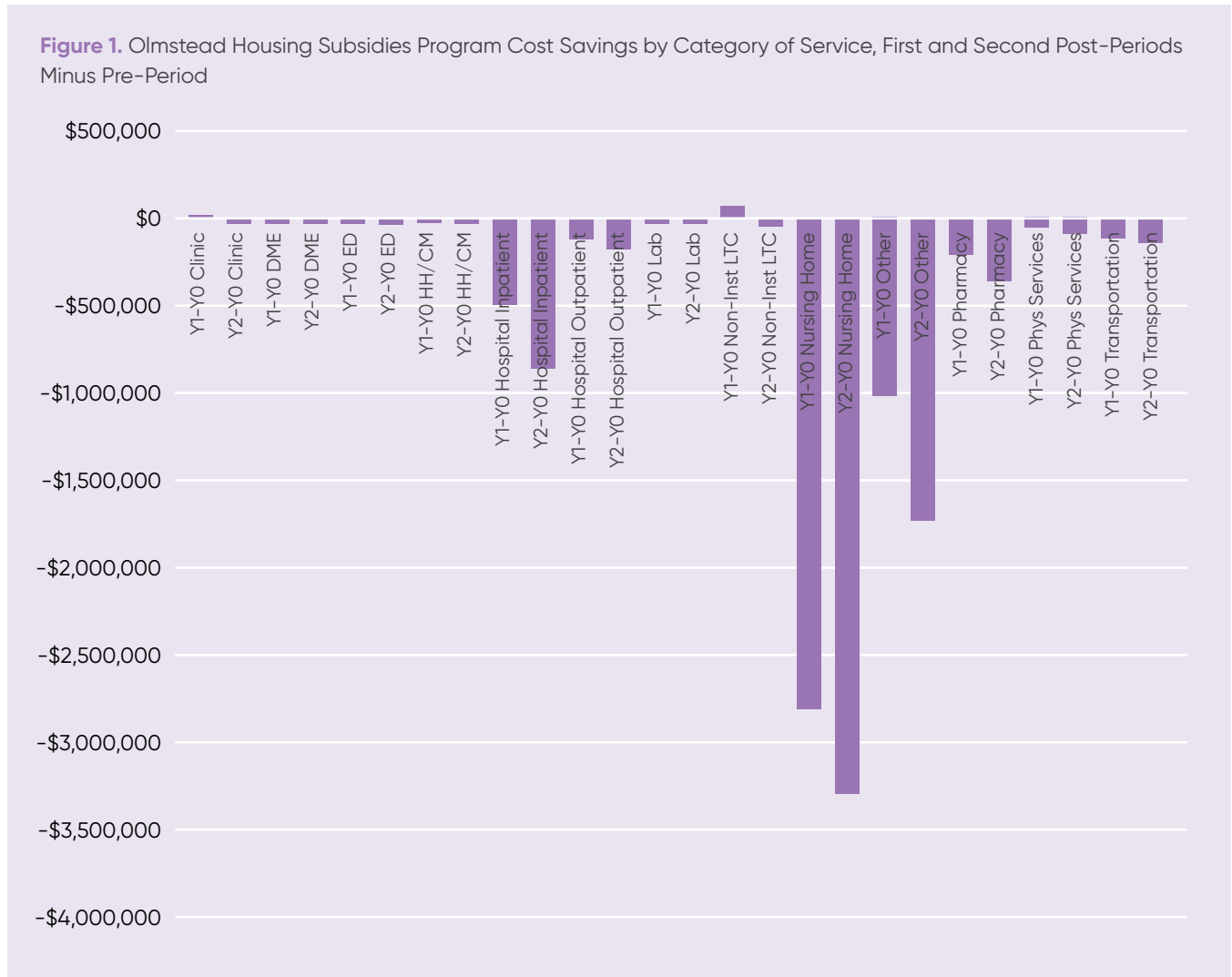
Service Classification/ Analysis Cohort	N	Pre-Period Total Cost	Post-Period Total Cost	Total Cost Difference	Mean Cost Difference	Median Cost Difference	Sign Test
Non-Institutional LTC							
Pre vs. 1 Year Post	88	\$39,352	\$126,751	\$87,399	\$993	\$0	n.s.
Pre vs. 1 Year Post	68	\$34,390	\$111,321	\$76,931	\$1,131	\$0	n.s.
Pre vs. 2 Years Post	68	\$34,390	\$0	-\$34,390	-\$506	\$0	n.s.
Nursing Home							
Pre vs. 1 Year Post	88	\$4,021,484	\$548,906	-\$3,472,578	-\$39,461	-\$39,899	***
Pre vs. 1 Year Post	68	\$3,335,559	\$496,413	-\$2,839,146	-\$41,752	-\$43,943	***
Pre vs. 2 Years Post	68	\$3,335,559	\$0	-\$3,335,559	-\$49,052	-\$53,828	***
Other							
Pre vs. 1 Year Post	88	\$2,241,252	\$871,622	-\$1,369,630	-\$15,564	-\$244	***
Pre vs. 1 Year Post	68	\$1,749,109	\$725,415	-\$1,023,694	-\$15,054	-\$244	**
Pre vs. 2 Years Post	68	\$1,749,109	\$0	-\$1,749,109	-\$25,722	-\$3,779	***
Pharmacy							
Pre vs. 1 Year Post	88	\$403,689	\$210,812	-\$192,878	-\$2,192	-\$9	***
Pre vs. 1 Year Post	68	\$350,020	\$159,159	-\$190,861	-\$2,807	\$0	**
Pre vs. 2 Years Post	68	\$350,020	\$0	-\$350,020	-\$5,147	-\$19	***
Physician Services							
Pre vs. 1 Year Post	88	\$112,587	\$51,282	-\$61,305	-\$697	-\$78	***
Pre vs. 1 Year Post	68	\$79,898	\$38,954	-\$40,945	-\$602	-\$61	**
Pre vs. 2 Years Post	68	\$79,898	\$0	-\$79,898	-\$1,175	-\$423	***
Transportation Services							
Pre vs. 1 Year Post	88	\$222,551	\$62,800	-\$159,751	-\$1,815	-\$1,133	***
Pre vs. 1 Year Post	68	\$133,285	\$38,679	-\$94,605	-\$1,391	-\$1,133	***
Pre vs. 2 Years Post	68	\$133,285	\$0	-\$133,285	-\$1,960	-\$1,357	***

Table 6D. Percentile Breakdowns of Cost Savings (Post-Period minus Pre-Period, with Negative Numbers Representing Cost Savings)

	Pre-Period minus Post- Period Year 1 (N=88)	Pre-Period minus Post- Period Year 2 (N= 68)
5th Percentile	-\$147,583	-\$188,737
10th Percentile	-\$124,342	-\$161,875
25th Percentile	-\$87,931	-\$120,362
50th Percentile	-\$67,255	-\$90,239
75th Percentile	-\$42,960	-\$74,502
90th Percentile	-\$17,853	-\$59,468
95th Percentile	\$1,263	-\$42,154

The pre-post change is highly variable between participants, but over 90% of all participants demonstrate at least some cost savings. The median cost savings in the first post-enrollment year for the enrollees in this program is \$67,255. The median cost savings in the second post-enrollment year for clients who have two years of post-enrollment data available in this program is \$90,239. As such, cost savings significantly outweighed the slight increases in Year 1 spending for clients in the top 10%.

Figure 1. Olmstead Housing Subsidies Program Cost Savings by Category of Service, First and Second Post-Periods Minus Pre-Period



Conclusions

Overall, this program shows large, statistically significant decreases in total costs. The largest changes in spending are in the nursing home and “Other” categories. Hospital inpatient and outpatient services, pharmacy costs, physician services, and transportation categories also exhibited notable savings. No categories demonstrated significant cost increases. As such, this program can be considered hugely successful in reducing Medicaid spending.



OFFICE FOR PEOPLE WITH DEVELOPMENTAL DISABILITIES: EXPANSION OF EXISTING RENTAL/SERVICES

OPWDD clients were excluded from all Comparison group-based analyses, as an appropriate matched sample with similar acuity levels could not be determined from available data. However, this program demonstrated significant cost savings on a pre-post basis in both the Cost 1 and Cost 2, Volume 1 reports. An extended set of analyses with a larger client group was thus undertaken here to establish the consistency of these results.

- **Program Description:** The program provides rental subsidies and services to individuals with intellectual or developmental disabilities who move from certified residential settings with continuous supervision (supervised model residences) to more independent, less restrictive housing (supportive model certified residences or uncertified private apartments with support services such as community habilitation and personal care). A subset of program participants individually tailor their service structures through OPWDD’s Self-Direction program. The OPWDD Expansion of Existing Rental/Services is intended to help the state achieve its Americans with Disabilities Act (ADA)/Olmstead Implementation Plan goals in addition to reducing Medicaid spending.
- **Population Served:** Individuals with developmental disabilities who expressed interest in more independent living or who were referred by family or provider agencies.
- **Program Start Date:** May 2013
- **Enrollment:** 66 included in analysis; 61 had data available for two years post enrollment.
- **Comorbidities:** Enrollees are most likely to have a serious mental illness (SMI) or an “other” chronic condition (**Table 7A**).
- **Care Coordination:** Care coordination enrollment was similar in the pre- and post-periods examined. Medicaid Managed Care and Health Home enrollment were consistently low; over half of clients had dual eligibility (**Table 7B**).

Summary

OPWDD demonstrates significant overall cost savings in the post periods examined, for both one and two years after enrollment. The only category to demonstrate significant cost savings was the Other service category (with Clinic spending showing a significant decrease in Year 2 only), primarily driven by decreased spending on OPWDD waiver services¹² (rate code 269, “residential habilitation in IRA/CR-supervised”). Several categories showed significant cost increases, including Health Home/care management, non-institutional long-term care, and transportation; hospital inpatient spending showed some marginal to significant increases as well (p’s 0.06 to 0.09). The remaining categories do not show statistically significant changes and are mixed in terms of the cost behavior in the pre- and post-periods. A graphical depiction of the cost categories follows. These results indicate that cost savings in waiver services drive overall cost savings for the program.

Table 7A. Comorbidity Distribution for Enrollees Analyzed

	Total Group (Post Year 1)	Percent of Total Group	Post Years 1 & 2	Percent of Subgroup
Serious Mental Illness	39	59%	36	59%
Substance Use Disorder	2	3%	0	0%
Other Chronic Condition	23	35%	21	34%
HIV	0	0%	0	0%
3 or more of the above	1	1.5%	0	0%
All 4 of the above	0	0%	0	0%

Table 7B. Care Coordination for Enrollees Analyzed

	Pre-Period Prevalence	Post Year 1 Prevalence	Post Year 2 Prevalence
Medicaid Managed Care Enrollment	8%	6%	5%
Health Homes Enrollment	0%	0%	0%
Dual Eligibility	59%	58%	54%

Table 7C. Pre-Post Medicaid Costs for Residents of OPWDD, by Category of Service

Service Classification/ Analysis Cohort	N	Pre-Period Total Cost	Post-Period Total Cost	Total Cost Difference	Mean Cost Difference	Median Cost Difference	Sign Test
Olmstead Housing Subsidies							
Pre vs. 1 Year Post (all)	66	\$6,768,050	\$3,368,132	-\$3,399,918	-\$51,514	-\$58,641	***
Pre vs. 1 Year Post	61	\$6,242,800	\$3,221,012	-\$3,021,788	-\$49,538	-\$55,033	***
Pre vs. 2 Years Post	61	\$6,242,800	\$2,845,964	-\$3,396,835	-\$55,686	-\$61,981	***
Clinic							
Pre vs. 1 Year Post	66	\$168,413	\$151,597	-\$16,816	-\$255	-\$195	n.s.
Pre vs. 1 Year Post	61	\$161,266	\$146,452	-\$14,814	-\$243	-\$183	n.s.
Pre vs. 2 Years Post	61	\$161,266	\$126,299	-\$34,967	-\$573	-\$344	*
DME							
Pre vs. 1 Year Post	66	\$16,474	\$10,088	-\$6,386	-\$97	\$0	n.s.
Pre vs. 1 Year Post	61	\$16,408	\$10,088	-\$6,320	-\$104	\$0	n.s.
Pre vs. 2 Years Post	61	\$16,408	\$7,218	-\$9,191	-\$151	\$0	n.s.
Emergency Department							
Pre vs. 1 Year Post	66	\$8,501	\$12,424	\$3,924	\$59	\$0	n.s.
Pre vs. 1 Year Post	61	\$7,659	\$11,856	\$4,197	\$69	\$0	n.s.
Pre vs. 2 Years Post	61	\$7,659	\$10,062	\$2,403	\$39	\$0	n.s.
Health Home/Care Mgmt							
Pre vs. 1 Year Post	66	\$165,033	\$189,818	\$24,785	\$376	\$26	***
Pre vs. 1 Year Post	61	\$150,107	\$171,846	\$21,739	\$356	\$253	***
Pre vs. 2 Years Post	61	\$150,107	\$157,637	\$7,529	\$123	\$267	**
Hospital Inpatient							
Pre vs. 1 Year Post	66	\$23,244	\$69,944	\$46,701	\$708	\$0	†
Pre vs. 1 Year Post	61	\$10,232	\$69,944	\$59,712	\$979	\$0	*
Pre vs. 2 Years Post	61	\$10,232	\$89,557	\$79,326	\$1,300	\$0	†
Hospital Outpatient							
Pre vs. 1 Year Post	66	\$15,586	\$22,362	\$6,776	\$103	\$0	n.s.
Pre vs. 1 Year Post	61	\$14,918	\$20,479	\$5,562	\$91	\$0	n.s.
Pre vs. 2 Years Post	61	\$14,918	\$27,807	\$12,889	\$211	\$0	n.s.
Lab							
Pre vs. 1 Year Post	66	\$1,396	\$801	-\$594	-\$9	\$0	n.s.
Pre vs. 1 Year Post	61	\$1,038	\$801	-\$237	-\$4	\$0	n.s.
Pre vs. 2 Years Post	61	\$1,038	\$1,283	\$244	\$4	\$0	†

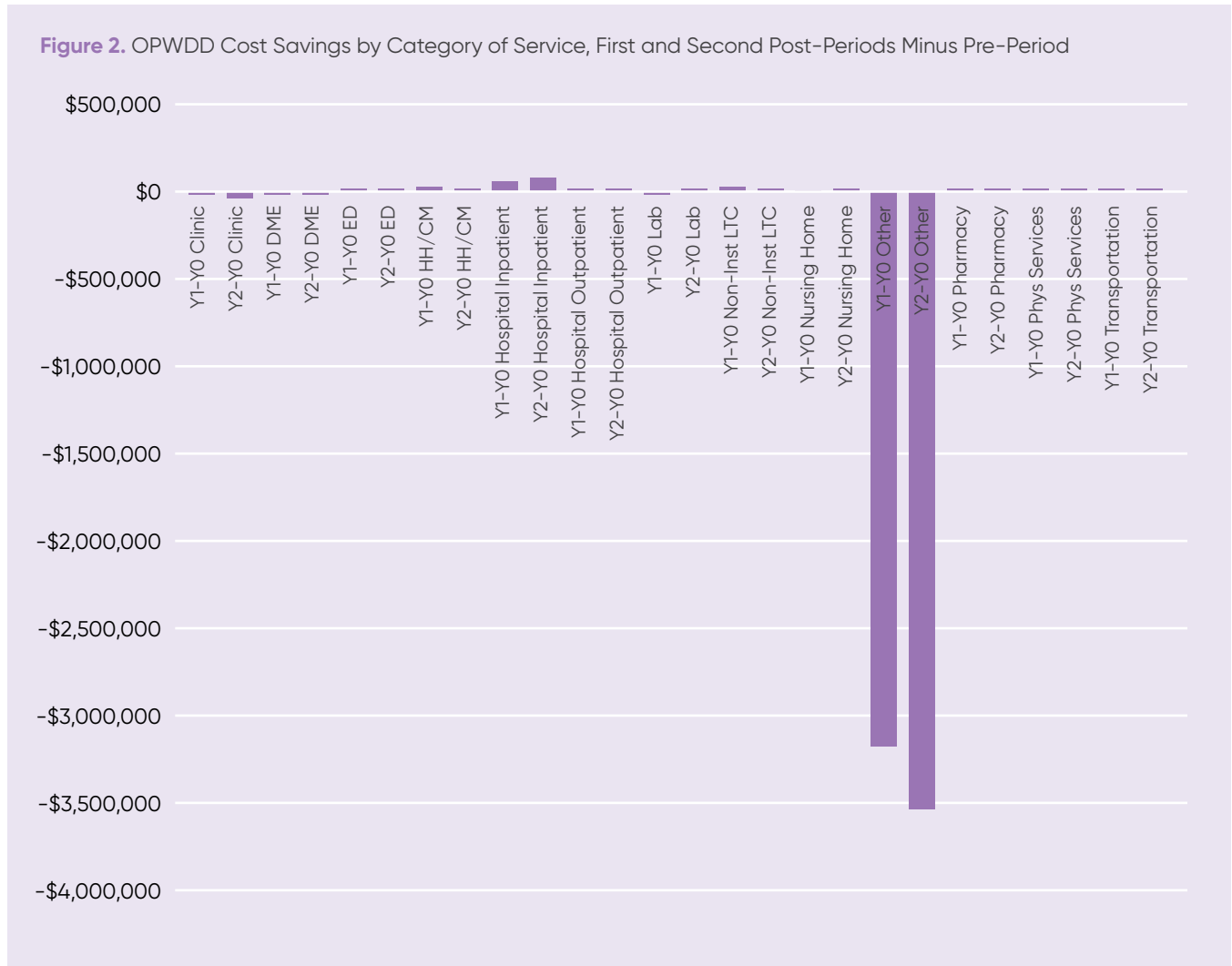
Service Classification/ Analysis Cohort	N	Pre-Period Total Cost	Post-Period Total Cost	Total Cost Difference	Mean Cost Difference	Median Cost Difference	Sign Test
Non-Institutional LTC							
Pre vs. 1 Year Post	66	\$0	\$35,652	\$35,652	\$540	\$0	*
Pre vs. 1 Year Post	61	\$0	\$26,782	\$26,782	\$439	\$0	*
Pre vs. 2 Years Post	61	\$0	\$20,909	\$20,909	\$343	\$0	n.s.
Nursing Home							
Pre vs. 1 Year Post	66	\$0	\$0	\$0	\$0	\$0	-
Pre vs. 1 Year Post	61	\$0	\$0	\$0	\$0	\$0	-
Pre vs. 2 Years Post	61	\$0	\$1,411	\$1,411	\$23	\$0	n.s.
Other							
Pre vs. 1 Year Post	66	\$6,220,059	\$2,706,727	-\$3,513,331	-\$53,232	-\$59,030	***
Pre vs. 1 Year Post	61	\$5,739,817	\$2,596,953	-\$3,142,863	-\$51,522	-\$58,686	***
Pre vs. 2 Years Post	61	\$5,739,817	\$2,229,962	-\$3,509,855	-\$57,539	-\$62,612	***
Pharmacy							
Pre vs. 1 Year Post	66	\$106,598	\$108,827	\$2,229	\$34	\$3	n.s.
Pre vs. 1 Year Post	61	\$104,737	\$108,439	\$3,702	\$61	\$4	n.s.
Pre vs. 2 Years Post	61	\$104,737	\$110,164	\$5,427	\$89	\$0	n.s.
Physician Services							
Pre vs. 1 Year Post	66	\$36,162	\$38,279	\$2,116	\$32	-\$27	n.s.
Pre vs. 1 Year Post	61	\$30,404	\$36,123	\$5,718	\$94	-\$11	n.s.
Pre vs. 2 Years Post	61	\$30,404	\$36,162	\$5,757	\$94	\$6	n.s.
Transportation Services							
Pre vs. 1 Year Post	66	\$6,585	\$21,611	\$15,027	\$228	\$0	**
Pre vs. 1 Year Post	61	\$6,213	\$21,248	\$15,035	\$246	\$0	**
Pre vs. 2 Years Post	61	\$6,213	\$27,495	\$21,282	\$349	\$0	**

Table 7D. Percentile Breakdowns of Cost Savings; Post-Period Minus Pre-Period, with Negative numbers representing Cost Savings

	Pre-Period minus Post- Period Year 1 (N=66)	Pre-Period minus Post- Period Year 2 (N= 61)
5th Percentile	-\$117,923	-\$153,657
10th Percentile	-\$86,444	-\$103,285
25th Percentile	-\$72,074	-\$80,917
50th Percentile	-\$58,641	-\$61,981
75th Percentile	-\$26,196	-\$25,739
90th Percentile	-\$12,725	\$1,124
95th Percentile	\$20,038	\$30,510

The pre-post change is highly variable between participants. The median cost savings in the first post-enrollment year for the enrollees in this program is \$58,641. The median cost savings in the second post-enrollment year for clients who have two years of post-enrollment data available in this program is \$61,981. As such, cost savings significantly outweighed the increases in spending for clients in the top 10%.

Figure 2. OPWDD Cost Savings by Category of Service, First and Second Post-Periods Minus Pre-Period



Conclusions

Overall, this program shows large, statistically significant decreases in total costs driven almost completely by decreases in “Other” spending. Several categories showed significant cost increases, including Health Home/care management, non-institutional long-term care, and transportation. Hospital inpatient spending showed some marginal to significant increases as well. Even so, these rises are far outweighed by the overall decrease seen, making the program successful in reducing Medicaid spending.



Extended Analyses: HHAP Capital Project Development Costs

A further set of analyses examined the potential timelines of when the HHAP Capital Projects might “break even,” or when the total amount saved (on Medicaid and cross-sector spending) might be greater than the initial development investment and cumulative service and operating costs. However, it was determined that this balance could not be achieved for most programs, given the high annual service and operating expenditures for these programs in the face of more modest Medicaid and cross-sector cost savings (see **Table 8**).

Annual costs and savings were identified within each program. Spending was examined by finding the average per person per year cost and multiplying it by the number of units in each building to approximate annual spending. All four of the examined HHAP projects had substantial service and operating costs, ranging from about \$6,000 to \$37,000 per-person per-year, or approximately \$80,000 to \$1 million per project per year. And while most projects showed substantial Medicaid claim savings (ranging from about \$2,600 to \$11,800 per person per year), these changes were typically much less than these annual expenditures. Further, only one of the four HHAP projects examined had any clients with any pre-period other setting use; while use declined to zero days in the post-period, the limited spending in this sector in the pre-period made any cross-sector cost savings minimal.

As such, only one program was identified where annual savings were expected to be greater than annual service and operating costs: Opportunities for Broome. However, savings were only about \$14,000 overall (or about \$635 per unit). It would thus take approximately 1,100 years for the cumulative savings to outweigh the total development investment in the building.

None of the HHAP Capital Projects are thus expected to be able to “pay off” the capital investment in the near future. However, enrollment in these projects may have other cross-sector savings not able to be captured here that could balance out the initial investment and substantial service and operating costs.

Table 8. HHAP Capital Project Annual Spending versus Saving Projections

HHAP Capital Project	Units	Total Development Costs	Service & Operating Costs	Medicaid Claim Savings	Cross-Sector Savings	Total Savings	Annual Spending vs Savings
<i>(Per-Person Per-Year x N units)</i>							
Son House/ Providence Housing	21	\$2,643,539	\$129,028	-\$56,436	\$0	-\$56,436	\$72,592
Opportunities for Broome	22	\$3,641,889	\$81,564	-\$95,530	\$0	-\$95,530	-\$13,965
Hope Gardens	20	\$4,392,813	\$757,503	-\$140,260	-\$51,158	-\$191,418	\$566,085
Evergreen Health Services	50	\$16,491,293	\$987,943	-\$592,665	\$0	-\$592,665	\$395,278



Summary

MRT-SH program investment and cost savings were here investigated to determine the impact of the substantial Medicaid and other source spending on post-enrollment spending, both in terms of Medicaid dollars and cross-sector spend. As found in Cost 2, Volume 2, Treatment clients demonstrated significantly greater Medicaid claim cost reductions than did Comparison clients; however, given the high program costs involved in these programs, this claim savings alone was generally insufficient to balance out the program investment (though participants in the highest spending decile did show a significant spending decrease, likely due to their especially high Medicaid claim cost savings).

However, when non-Medicaid cross-sector costs (non-MRT program investments) and savings (costs per day in alternative settings in the pre- and post-periods) were considered, Treatment participants demonstrated greater overall spending decreases than did Comparison, for a relative savings of about \$7,000,000, or about \$3,500 per person. As such, enrollment into MRT-SH programs resulted in greater global cost savings than “treatment as usual.”

These savings appear to be driven particularly by decreased usage of other settings in the post-period for Treatment clients. While days in setting remained steady or increased for Comparison clients, days decreased for Treatment clients, resulting in huge cost savings. The combination of Medicaid claim savings and cross-sector savings was thus sufficient to overcome the sizeable program investment. Further, while such savings were not seen for clients in lower pre-period spending deciles, Treatment clients in the two highest spending deciles showed greater decreases than did their Comparison counterparts, again demonstrating that the overall treatment effect seen is likely driven by these pre-period high spenders.

Notably, only three sources of cross-sector spending were here examined. While stays in inpatient psychiatric hospitals, OMH residential facilities, and homeless shelters represent significant and costly settings, cross-sector spend is not limited to these domains. MRT-SH enrollment might have additional impacts on time spent in addiction rehabilitation centers or in prisons or jails, both of which are also expensive settings, or in broader domains such as increased education or employment. As data was not available for these areas for all Treatment and Comparison participants, such potential effects could not be investigated in this report, but future work could take these domains into consideration.

These comparisons necessarily collapse across several different likely subgroups of clients. Given the generalized propensity score model implemented, direct comparisons between participants with different diagnoses or housing histories could not be undertaken. However, some subgroups might be more likely to demonstrate savings than others. Future research could implement more specific models which would allow for more in-depth investigations of these groups.

Additionally, both the Olmstead Housing Subsidy program and OPWDD Rental Assistance program demonstrated significant Medicaid claim cost savings one and two years after enrollment. In both cases, savings were particularly driven by decreases in “other” service spending; OPWDD also showed notable decreases in nursing home-related spending.



Current Conclusions

The overall treatment effect here seen represent a promising result of MRT-SH interventions: Treatment clients demonstrate greater cross-sector cost savings in the first year after MRT-SH enrollment than do their matched Comparison counterparts, even after accounting for MRT-SH program costs. Consistent with previous reports, Treatment clients demonstrated greater Medicaid claim spending decreases than did Comparison. As MRT-SH programs represent costly interventions, with high annual service and operating costs and sizeable development investments, examination of Medicaid spending changes alone is insufficient to overcome this spending. But when non-Medicaid cross-sector costs were also examined, Treatment participants demonstrated greater overall spending decreases than did Comparison, for a relative savings of about \$7 million, or about \$3,500 per person.

These decreases are likely driven by clients who were particularly high utilizers before enrollment, and likely stem from decreases in Medicaid inpatient, nursing home, and other service category spending, and decreases in utilization of other settings (inpatient psychiatric centers, OMH residential facilities, and homeless shelters, all of which are quite costly).

As such, participation in a supportive environment, combined with enrollment in Health Homes or Medicaid managed care, may lead to a more efficient use of health care resources and societal resources in general.

MRT-SH programs tend to target clients who are high Medicaid utilizers, both in terms of cost and number of visits; have certain diagnoses; and/or are in nursing homes or residential treatment facilities. These results demonstrate that high-spending clients or clients with certain histories are especially likely to show significant treatment effects, and thus represent appropriate candidates for programs. Some targeting criteria may not have as much impact on spending changes: clients with HIV or with more emergency department visits may show some cost savings but not savings greater than "treatment as usual." However, more research specifically focused on diagnoses, prior housing status, and other subgroup factors is needed to directly examine changes in Medicaid spending with appropriately created and matched groups.

**Medicaid Redesign Team
Supportive Housing Evaluation**

Cost Report

Year 3: Treatment versus Comparison
Group, Investments versus Savings Analyses

May 2020