Moore Place Permanent Supportive Housing Evaluation Study Final Report

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TABLE OF CONTENTS

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Executive Summary

MOORE PLACE PERMANENT SUPPORTIVE HOUSING EVALUATION STUDY

APRIL 28, 2015

Moore Place, a HousingWorks program of the Urban Ministry Center in Charlotte, North Carolina opened in January 2012 and houses 85 former chronically homeless adults. Moore Place is a permanent supportive housing (PSH) facility and is the first such facility in the Charlotte area to operate as a *housing first* model. Housing first programs emphasize housing as a first step in service delivery; have low threshold admissions policies with minimal eligibility criteria; use a harm reduction approach to substance use; focus on eviction prevention; and have reduced service requirements that do not require service compliance or success in order for a tenant to qualify for or maintain housing. Moore Place provides *non* time-limited housing and comprehensive supportive services to individuals who have extensive histories of homelessness and at least one disabling condition (mental health and substance abuse disorders, chronic health disorders, physical disabilities, and developmental disabilities). As with other housing first PSH programs, Moore Place recognizes housing as the foundation necessary to effectively address tenant health and mental health disorders.

This report summarizes the activities and findings of the Moore Place Permanent Supportive Housing Evaluation Project (Evaluation Project), a two-year study led by Dr. Lori Thomas, Associate Professor in the School of Social Work and College of Health and Human Services at the University of North Carolina at Charlotte (UNC Charlotte) and supported by research team members at UNC Charlotte, the University of South Carolina College of Social Work, and the University of North Carolina at Greensboro/North Carolina A&T University School of Social Work. Key findings are as follows:

MOORE PLACE IMPROVES THE HOUSING STABILITY OF ITS TENANTS.

Moore Place effectively ends homelessness for the majority of its tenants. Of the 73 tenants who participated in baseline data collection, 70% (n=51) remained housed at Moore Place after two years. Of the 22 study participants no longer at Moore Place, four individuals died during their tenancy at Moore Place (the deceased residents were not included in housing stability calculations). Five tenants left for other permanent housing. Including these tenants, the housing stability rate among those who participated in the study was 81% (n=56). Tenants were homeless an average of seven years prior to moving into Moore Place and experienced periods of homelessness ranging up to 25 years. The Moore Place housing stability rate is consistent with other housing first permanent supportive housing models across the country.

81%

Housing stability rate

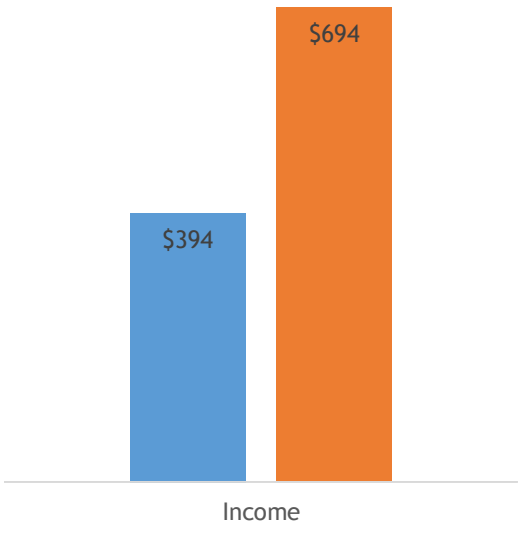


Figure 1: Increase in Average Income from Baseline to Year 2 (n=47)

MOORE PLACE TENANT INCOME INCREASED SINCE ENTERING THE PROGRAM.

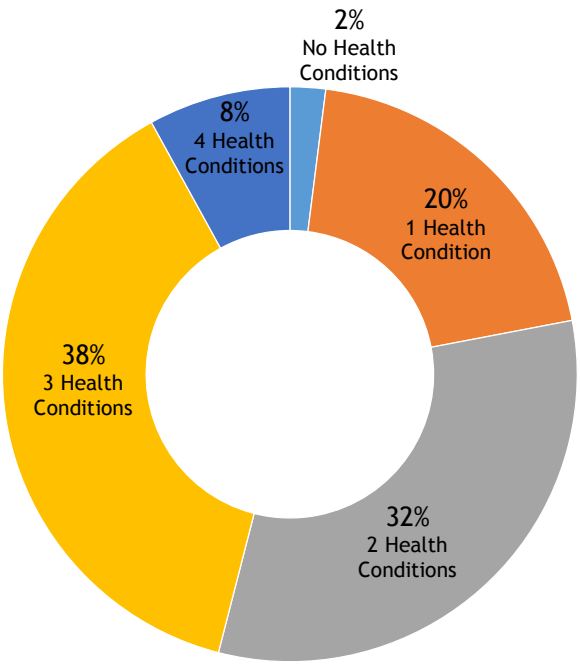
Average tenant income increased 76% from $394 (SD=398) at baseline to $694 (SD=445) at Year 2, a statistically significant difference ($p<.01$). Supplemental Security Income (SSI) was the key form of benefit income that increased between the baseline and Year 2 data collection points. In North Carolina, SSI recipients are automatically eligible for Medicaid, providing an important health care resource for a population with numerous health challenges. At Year 2, 72% (n=34) of participating tenants received Medicaid, an increase from 36% (n=17) at program entry. Regular income also allows tenants to contribute to the cost of their housing and to resume or develop financial management behaviors necessary to maintain housing.

MOORE PLACE TENANTS ARE MORE VULNERABLE THAN ANTICIPATED, PARTICULARLY REGARDING AGE, DISABLING CONDITIONS, AND THE IMPACT OF TRAUMATIC STRESS.

Moore Place was designed to address chronic homelessness among the most vulnerable in the Charlotte community yet the profile of individuals served suggests a population with intersecting challenges that in some cases *surpass* the vulnerability of those in comparable programs. The disproportionate number of aging tenants suggests one dimension of vulnerability. The youngest tenant in the study was 36, but more than 75% (n=36) of participating tenants were over the age of 50. This exceeds the national average of 40% of individuals over 50 living in permanent supportive housing (US HUD, 2011). In addition, the majority of study participants (37, 79%) experienced two or more disabling health-related conditions including physical disability, chronic physical health conditions, mental health disorders, and substance use disorders. See Figure 2. Finally, over a third of tenants who participated in data collection at baseline met the clinical criteria for Post-Traumatic Stress Disorder (PTSD). As with aging and disabling conditions, traumatic experiences are associated with numerous adverse mental and physical health outcomes.

More than **75%** of Moore Place tenants are 50 years old or older.

Figure 2: Number of Disabling Health Conditions (n=47)



REFLECTING THIS VULNERABILITY, TENANTS CONTINUE TO FACE HEALTH AND MENTAL HEALTH CHALLENGES.

After two years, most measures examining tenant health and mental health suggest no statistically significant improvements. Tenant perceptions of their own health and mental health, which are worse than those of the general population, further underscore vulnerability. These findings are not surprising considering that Moore Place tenants face multiple health-related disabling conditions. The findings affirm the importance of the housing first, permanent supportive housing service model that provides ongoing 24/7 support to tenants through an interdisciplinary clinical team.

DESPITE HEALTH AND MENTAL HEALTH VULNERABILITIES, MOORE PLACE TENANT USE OF EMERGENCY-RELATED HOSPITAL SERVICES DECREASED SUBSTANTIALLY.

In the two years after moving into Moore Place, tenants visited the emergency room of Carolinas HealthCare Systems and Novant Health 648 fewer times (an 81% reduction) and were hospitalized 292 fewer days (a 62% reduction) than during the two years before they moved in. The total amount billed was more than $2.4 million less in the two years after tenants moved to Moore Place than it was the two years before (a 68% reduction). The average number of emergency room visits decreased from 16 (SD=39) to 3 (SD=5) visits, the length of hospitalizations resulting from an ER visit decreased from 9 (SD=18) to 4 (SD=12) days. See Figure 3. The average bill amount per tenant decreased from $71,040 (SD=127,922) to $22,530 (SD=35,647). All decreases were statistically significant ($p<.05$). See Figure 4. Although hospital billing data may not be an accurate reflection of the actual costs of providing care[1], the reduction in ER visits and the length of resulting hospitalizations suggests meaningful reductions in associated costs.

[1]Actual costs are typically less than the charges reflected in hospital billing data. Hospital billing data, however, do not include additional amounts from physicians who bill for professional services separately.

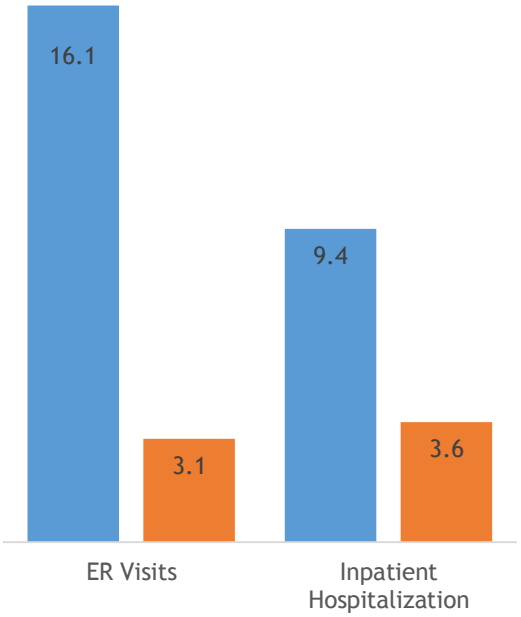


Figure 3: Average ER-Related Hospital Utilization 2 Years Pre/Post (n=50)

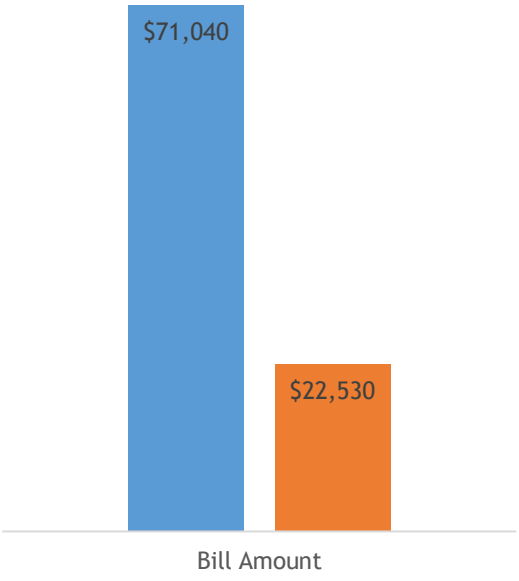


Figure 4: Average ER-Related Hospital Utilization Bill Amount 2 Years Pre/Post (n=50)

MOORE PLACE TENANT USE OF MECKLENBURG COUNTY MEDIC SERVICES ALSO DECREASED.

Ambulance calls and transports through Medic (also known as Mecklenburg EMS Agency) also decreased in the two years after tenants were housed at Moore Place. Emergency medical personnel responded to 312 fewer calls (a 76% reduction) and made 304 fewer transports (a 76% reduction) in the two years after tenants moved into Moore Place than they did in the two years before. The average number of calls made by study participants fell from 9 (SD=23) to 2 (SD=4) and transports fell from 8 (SD=23) to 2 (SD=4). Both changes were statistically significant ($p<.05$). See Figure 5. The average bill for tenant Medic utilization also decreased ($p<.05$). See Figure 6.

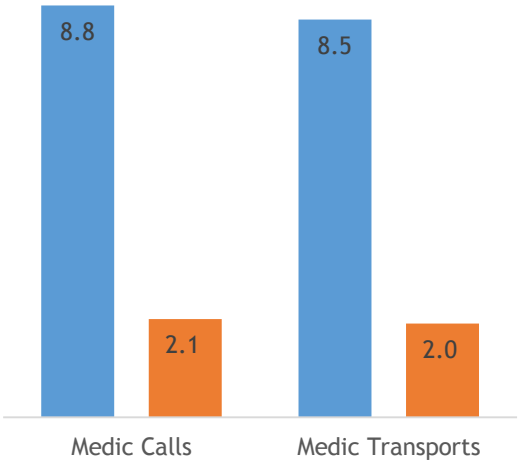


Figure 5: Average Medic Utilization 2 Years Pre/Post (n=47)

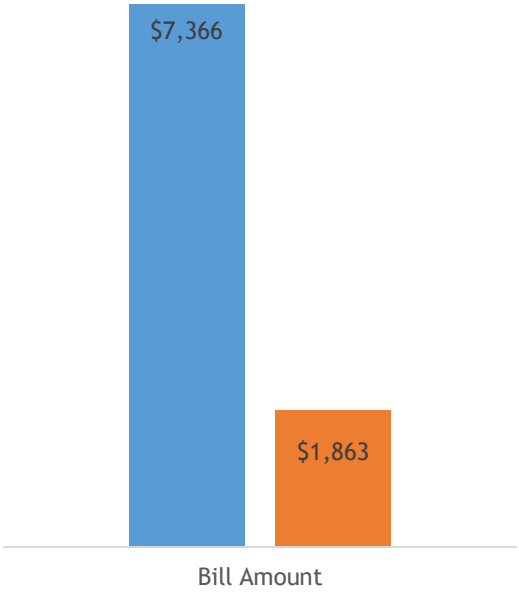


Figure 6: Average Medic Bill Amount 2 Years Pre/Post (n=47)

After moving into Moore Place, tenants' utilization of emergency health services decreased between **62%** and **81%**.

MOORE PLACE TENANTS HAVE REPLACED EMERGENCY SERVICES UTILIZATION WITH MORE APPROPRIATE – AND LESS EXPENSIVE – HEALTH UTILIZATION BEHAVIORS.

Upon entry into Moore Place, the interdisciplinary services team works with tenants who do not have a medical home to establish one and begin to address the effects of poor health that accumulated while homeless. Instead of ER visits, tenants begin to address their health challenges through primary care, planned procedures, and appointments with psychiatrists or other mental health providers. In the two years following their move into Moore Place, participants used Carolinas HealthCare System[2] outpatient services 207 more times (a 53% increase) than they did in the two years prior to Moore Place. Average utilization of outpatient services rose from 7.8 (SD=11.9) visits per person to 11.9 (SD=8.4) visits per person, a statistically significant increase ($p<.01$). See Figure 7. However, when the differences in average CHS utilization were compared across three time periods (1 Year Before, 1 Year After, 2 Years After) outpatient visits decreased during tenants' second year in Moore Place. The change was approaching statistical significance suggesting a possible trend in the reduction of outpatient utilization, $t=1.80$ (50) $p=.078$. Figure 8 depicts average ER visits and outpatient visits at CHS over three time periods. Outpatient utilization may decline as tenants begin to proactively address health concerns.

[2]Because the majority of Moore Place tenants established medical homes through a partnership with CHS, the outpatient analyses did not include other providers, such as Novant Health or the Veterans Administration.

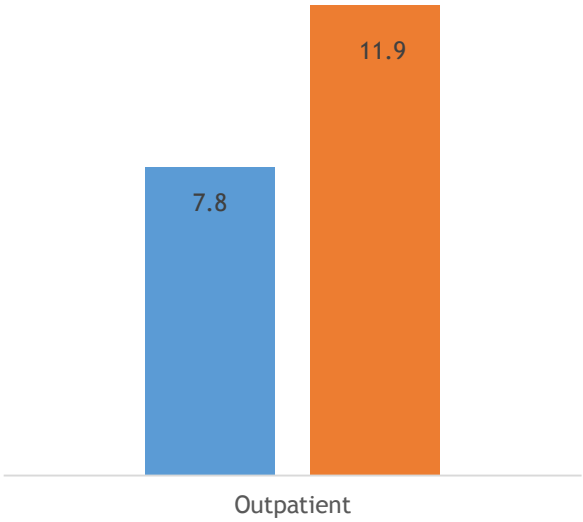


Figure 7: Average Outpatient Utilization 2 Years Pre/Post (n=50)

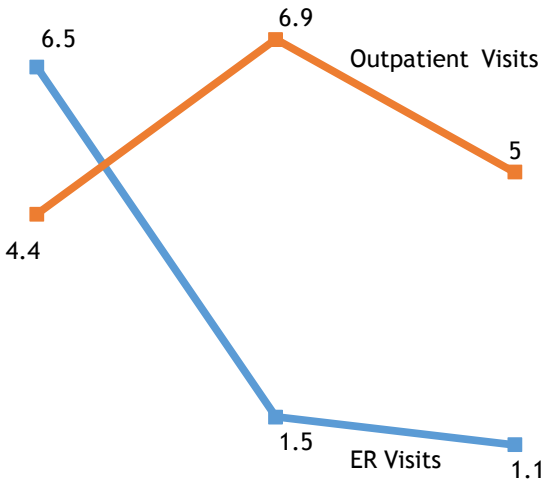


Figure 8: Average CHS ER & Outpatient Utilization across Time (n=50)

ARRESTS AND JAIL STAYS DECREASED DURING TENANTS' FIRST TWO YEARS AT MOORE PLACE.

Reductions in service utilization extend to the criminal justice system, specifically arrests by the Charlotte-Mecklenburg Police Department and incarcerations at the Mecklenburg County jail. Most tenants were not involved with the criminal justice system either before or after their move to Moore Place. However, of the tenants arrested or jailed in the two years preceding (n=21) or following (n=10) their move to Moore Place, there were 90 fewer arrests (an 82% reduction) and 1,050 fewer nights in jail (an 89% reduction). The decrease in the average number of arrests and jail stays was statistically significant (p=<.05 and p=<.01, respectively). See Figure 9.

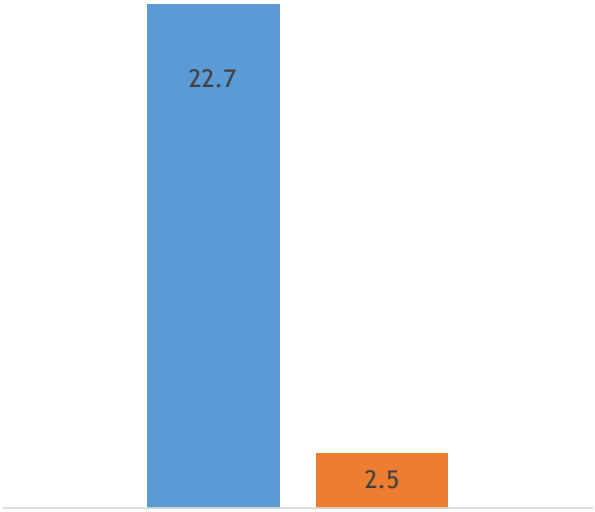


Figure 9: Average Incarceration Days 2 Years Pre/Post (n=52)

"Staff treat me like a person. They help you if you want it."

MOORE PLACE TENANTS INDICATE THAT STAFF MEMBERS ARE A KEY STRENGTH OF THE PROGRAM.

When asked at the end of Year 2 data collection, "What does Moore Place do well?" the majority of Moore Place tenants listed the staff. As one tenant noted, "Staff treat me like a person. They help you if you want it." Another tenant noted that staff members "are efficient in what they do. And they love and care for residents." Homeless persons' perceptions of the lack of staff availability, responsiveness, and respect are recognized as barriers to health and mental health services. Moore Place tenants describe staff as a strength of the program rather than as a barrier to meeting their needs.

The Moore Place Permanent Supportive Housing Evaluation Project suggests that Moore Place has succeeded in maintaining a high housing stability rate with a clinically and socially vulnerable population. In addition, the program has helped transform its tenants' use of community resources, reducing arrests, jail stays, and the utilization of emergency health services. Despite the myriad of health challenges the tenants of Moore Place face, the use of emergency departments and ambulance services has shifted notably toward more appropriate – and less expensive – use of primary health care. The persistence of negative health and mental health perceptions among tenants further suggests the importance of ***permanent*** and ***supportive*** in programs like Moore Place. As tenants marshal their strengths to cope with the cumulative physical and mental impact of life histories of poverty and homelessness, significant improvements in underlying conditions may take longer to realize. The reality that their housing remains and that the services they need are readily available offers both tenants and the community assurance that there is time, space, and support to effectively address the challenges and lingering effects of chronic homelessness.

Moore Place Permanent Supportive Housing Evaluation Study Final Report

April 28, 2015

This final report summarizes the activities and findings of the Moore Place Permanent Supportive Housing Evaluation Project (Evaluation Project), a four-phase longitudinal study conducted by researchers in the School of Social Work in the College of Health and Human Services at the University of North Carolina at Charlotte (UNC Charlotte), the University of South Carolina College of Social Work, and the University of North Carolina at Greensboro/North Carolina A&T University School of Social Work in partnership with the Urban Ministry Center.

Moore Place, a HousingWorks program of the Urban Ministry Center in Charlotte, North Carolina opened in January 2012 and houses 85 formerly chronically homeless adults. Moore Place is a permanent supportive housing (PSH) facility and the first PSH facility in the Charlotte area to operate as a *housing first* model. Housing first programs emphasize housing as a first step in service delivery; have low threshold admissions policies with minimal eligibility criteria; use a harm reduction approach to substance use; focus on eviction prevention; and have reduced service requirements that do not require service compliance or success in order for a tenant to qualify for or maintain housing. A review of evidence supporting the housing first PSH model is available in Appendix A. Moore Place provides non time-limited housing and comprehensive supportive services to individuals who have a disabling condition (mental health and substance abuse disorders, chronic health disorders, physical disabilities, and developmental disabilities) and have an extensive history of homelessness. Tenants are provided a one-bedroom efficiency apartment at Moore Place and on-site supportive services by an array of staff. The supportive services staff includes a full-time clinical director, five full-time social workers, a full-time nurse, and a part-time psychiatrist. Additionally, tenants without a primary care physician are connected to primary health care through a partnership with Carolinas HealthCare System (CHS). A description of the Moore Place Model is provided in Appendix B.

STUDY DESCRIPTION

The Moore Place Permanent Supportive Housing Evaluation Project (Evaluation Project) consisted of four components:

1. Housing, Clinical, and Social Stability
2. Hospital Utilization Patterns
3. Medic Utilization Patterns
4. Jail Utilization Patterns

The sample for each component of the study consisted of consenting participants from the new tenants (n=85) at Moore Place in 2012. Tenants were able to choose the components of the evaluation in which they participated. Thus, the sample sizes of the evaluation components vary, as tenants chose to participate in some components and not others. Tenants were informed that participating in the research project would have no bearing on their housing or services and that their individual answers would not be shared with staff. The research was approved by UNC Charlotte's Institutional Review Board. A brief description of each component is provided below. Additional information regarding the methodology of each study component is available in Appendix C.

First, the study examined the *impact of the program on the housing, clinical, and social stability of its tenants* in the first month of their residence and after 6, 12, and 24 months living at Moore Place. Overall, this component of the project aimed to 1) understand the impact of Moore Place on the individuals it serves; 2) provide empirical feedback to Urban Ministry Center on what is working and what issues may need further attention in service delivery; and, 3) build capacity at Urban Ministry Center to effectively evaluate its supportive housing programs. This part of the study addressed the following research questions:

1. What are the characteristics of the individuals being served by Moore Place?
2. Does participation in Moore Place improve tenant quality of life?
3. Does participation in Moore Place improve tenant housing stability?
4. Does participation in Moore Place improve tenant clinical stability? Specifically,
    - Does participation in Moore Place stabilize or improve tenant's mental health symptomology?
    - Does it improve tenant perceptions of physical and mental health?
    - How does it impact substance use?
5. Does participation in Moore Place improve tenant social stability? Specifically, does it increase perceived social support from family and friends?

The Evaluation Project addressed these questions by utilizing a prospective longitudinal one group pretest-posttest research design.

The second component of the Evaluation Project examined the *hospital system utilization patterns* of Moore Place tenants, including emergency room related utilization and outpatient utilization. For consenting participants, utilization patterns were examined at four time periods: During the two years prior to tenant entry into Moore Place, one year prior to tenant entry, one year following tenant entry into Moore Place, and two years following tenant entry into Moore Place. The aim of this component of the research was to 1) examine the impact of Moore Place on tenant utilization behavior and 2) examine the impact of Moore Place on local hospital systems. This part of the study addressed the following research question: How does Moore Place impact the hospital system utilization patterns of its tenants? The Evaluation Project addressed this question through a retrospective cohort design using data from itemized hospital bills collected by Urban Ministry Center staff.

The third component of the Evaluation Project examined the *Medic utilization patterns* of Moore Place tenants. For consenting participants, utilization patterns were examined at four time periods: During the two years prior to tenant entry into Moore Place, one year prior to tenant entry, one year following tenant entry into Moore Place, and two years following tenant entry into Moore Place. The aim of this component of the research was to 1) examine the impact of Moore Place on the Mecklenburg County Emergency Medical Services agency and 2) examine the impact of Moore Place on utilization behavior. This part of the study addressed the following research question: How does Moore Place impact the ambulance patterns of its tenants? The Evaluation Project addressed this question through a retrospective cohort design, using Medic administrative data collected by Urban Ministry Center staff.

The final component of the Evaluation Project examined the *jail utilization patterns* of Moore Place tenants. Utilization patterns were examined at four time periods: During the two years prior to tenant entry into Moore Place, one year prior to tenant entry, one year following tenant entry into Moore Place, and two years following tenant entry into Moore Place. The aim of this component of the research was to examine the impact of Moore Place on arrests and incarceration in the Mecklenburg County Jail. This part of the study addressed the following research question: How does Moore Place impact the jail utilization patterns of its tenants? The Evaluation Project addressed this question through a retrospective cohort design using publically available administrative data collected by Urban Ministry Center staff.

STUDY LIMITATIONS

As with any research endeavor, this project reflects limitations. First, although the research team sought to enhance the rigor of the project by including multiple measurements over time, due to financial constraints, the project did not include a control or comparison group. The lack of such a comparison makes it impossible to more conclusively link the changes or lack of changes found in the study to the intervention. In this sense, findings remain tentative.

Second, baseline data in the first component of the Evaluation Project were collected on tenants within 30 days of their move-in to Moore Place. Notable changes may have occurred in tenants *before* baseline measurements were captured – i.e., tenants already felt improvements in their lives because they were no longer homeless and had access to services at Moore Place. Though not practically feasible, collecting baseline measures prior to move-in may have better captured changes, real or perceived, that had not yet occurred.

Third, the first component of the Evaluation Project relies largely on self-report data and as such may be subject to social desirability bias. Such a bias suggests that study participants may answer questions with answers they feel are more socially acceptable to program staff or those collecting the data. Moore Place is a low-barrier program and as such, when it began, was substantially different than any program of its kind in the Charlotte area. Study participants, many with extensive histories of homelessness, are familiar with programs that have little to no tolerance for substance use or behavioral disturbances that result from mental health disorders. Despite being assured of confidentiality and that their answers would have no bearing on their housing, they may have answered questions in a way that is more acceptable to the programs with which they are familiar in order to preserve their housing. Over the study period as tenants recognized that their residency was not tied to service success or sobriety, they may have become more transparent during interviews. This may have resulted in more honesty and disclosure in later phases of research resulting in scores that may suggest more mental health and substance abuse issues.

Finally, the hospital billing data used in the second component of the Evaluation Project may not be an accurate reflection of the specific costs of providing care. Hospital bills reflect charges, not the actual costs incurred by the hospital system to provide the services or the amount paid by various payers including Medicaid, Medicare, private insurers, and individuals. Despite this limitation, the positive impact of Moore Place on tenant

utilization patterns can be observed. While the amount billed should be viewed tentatively, the reduction in ER utilization and the length of hospitalization suggests reduction in associated costs.

STUDY FINDINGS

Part 1: Housing, Clinical, & Social Stability Study

Response Rate. Tenant participation in Part 1 of the study was acceptable throughout all four phases of data collection. Of the 85 tenants of Moore Place, 86% (73) tenants participated in the first phase of data collection. In the second phase, the 64 tenants (75%) participated. Nine tenants left Moore Place. In the third phase of data collection, six additional tenants who were participating in the study left Moore Place resulting in a response rate of 68% (58). An additional seven tenants left Moore Place in the final phase of data collection, and four tenants elected not to participate in the final phase of the study resulting in a final response rate of 55% (47). Nevertheless, response rates are good and exceed or are comparable to studies with similar populations. High response rates suggest that the research findings are reflective of the population sampled, in this case the tenants of Moore Place.

Table 1: Response Rates (N=85)

	Baseline	Year 1	Year 2
	n (%)		
Participated in Study	73 (85.9)	58 (68.2)	47 (55.3)
Declined to Participate	12 (14.1)	0 (0)	4 (1.2)
Participants Left Program/Deceased	0(0)	15 (17.6)	22 (25.9)

Characteristics of Study Participants. Demographic information gathered at baseline suggests that a majority of Year 2 study participants identify as male (70%) and most identified as African-American or Black (68%). One participant (2%) identified as Hispanic. The majority of participating tenants were between the ages of 50 and 64 (70%). Of participating tenants who remained in the program after two years, the average age of study participants is 52, with an age range of 36 to 68 (SD= 6.6). Seven tenants (14%) identified as veterans. Twelve (24%) study participants had not earned a high school diploma or GED, but nine (18%) had attended some college, four tenants (8%) had received vocational training, and three tenants (6%) had completed post-secondary education. Table 2 details the demographic characteristics of study participants at program intake, Year 1, and Year 2.

Table 2: Study Participant Characteristics

	Baseline (n=73)	Year 1 (n=58)	Year 2 (n=47)	Left program* (n=18)
	n (%)			
Gender				
Female	19 (26)	17 (29.3)	16 (34.0)	3 (16.7)
Male	54 (74)	41 (70.7)	31 (66.0)	15 (83.3)
Race				
American-Indian	1 (14)	0 (0)	0 (0)	1 (5.6)
Black or African-American	49 (67.1)	38 (65.5)	32 (68.1)	12 (66.7)
White	23 (31.5)	20 (34.5)	15 (31.9)	5 (27.8)
Ethnicity				
Non-Hispanic/Non-Latino	72 (98.6)	57 (98.3)	46 (97.9)	18 (100)
Hispanic/Latino	1 (1.4)	1 (1.7)	1 (2.1)	0 (0)
Age at Move-In				
19-39	3 (4.1)	2 (3.4)	2(4.3)	1 (5.9)
40-49	16 (21.9)	13 (22.5)	9(19.1)	4 (23.5)
50-64	51 (69.9)	41 (70.7)	34(72.3)	12 (70.6)
65+	2 (2.7)	2 (3.4)	2(4.3)	0 (0)
Veteran	9 (12.3)	8 (13.8)	7 (14.9)	2 (11.1)
Level of Education				
Through 4th grade	1 (1.4)	1 (1.7)	1 (2.1)	0 (0.0)
5th - 11th grade	21 (28.8)	14 (24.2)	11 (23.4)	9 (50.0)
High school diploma	22 (30.1)	20 (34.4)	17 (36.2)	3 (16.7)
GED	8 (11.0)	5 (8.7)	4 (8.5)	2 (11.1)
Some college	13 (17.8)	10 (17.2)	8 (17.0)	3 (16.7)
Post-secondary school	4 (5.5)	4 (6.9)	3 (6.4)	0 (0.0)
Vocational/Technical Program	4 (5.5)	4 (6.9)	3 (6.4)	1 (5.6)

*As assessed at program entry; Excludes deceased (n=4).

Resources tenants received were also assessed at Year 2. Most (72%) of study participants received a monthly allotment from the Supplemental Nutrition Assistance Program (SNAP), formerly known as food stamps. Thirty-seven participants (74%) received Medicaid and seven (14%) received Medicare. At Year 2, two tenants (4%) were receiving Veterans Administration Health Care. These resources are detailed in Table 3.

Table 3: Study Participant Income and Resources

Source	Baseline (n=73)	Year 1 (n=58)	Year 2 (n=47)	Left program* (n=18)
Cash Benefits & Earned Income	n (%)			
No Income	33 (45.2)	20 (34.5)	9 (19.1)	7 (38.9)
Social Security	5 (6.8)	3 (5.2)	5 (10.6)	0 (0.0)
Supplemental Security Income (SSI)	28 (38.4)	29 (50.0)	27 (57.4)	8 (44.4)
Social Security Disability Income (SSDI)	7 (9.6)	9 (15.5)	8 (17.0)	1 (5.6)
Military Retirement	1 (1.4)	1 (1.7)	1 (2.1)	1 (5.6)
Unemployment	1 (1.4)	0 (0.0)	1 (2.1)	0 (0.0)
Employment	2 (2.7)	0 (0.0)	1 (2.1)	2 (11.1)
Other Resources & Benefits				
SNAP	52 (71.2)	47 (81.0)	33 (70.2)	12 (66.7)
Medicaid	31 (42.5)	41 (70.7)	34 (72.3)	8 (44.4)
Medicare	3 (4.1)	8 (13.8)	6 (12.8)	1 (5.6)
VA Health	1 (1.4)	1 (1.7)	1 (2.1)	0 (0.0)
Ryan White	N/A	2 (3.4)	1 (2.1)	N/A

*Resources as assessed at program entry; Excludes deceased (n=4). Ryan White benefits were not assessed at baseline

Study participants entered Moore Place with a variety of special needs, including health conditions (physical and mental health) and other special needs (developmental disabilities, experience of domestic violence). These conditions were indicated by the referring clinician or case manager and updated on a quarterly basis by Moore Place clinical staff. Mental and physical health conditions affect a majority of study participants. Over half of participating tenants had a mental health, substance abuse, or chronic health condition. Over a quarter of participants had a physical disability. The majority of study participants (78%) at Year 2 experienced two or more of the disabling health conditions (physical disability, HIV/AIDS, other chronic health conditions, mental health problem, or substance abuse problem). Only one study participant had no disabling health condition at Year 2, although the tenant did have a developmental disability. The health and other needs of study participants are summarized in Table 4 below.

Table 4: Study Participant Needs

Condition/Need	Baseline (n=73)	Year 1 (n=58)	Year 2 (n=47)	Left program* (n=18)
	n (%)			
Disabling Health Conditions				
Physical Disability	22 (30.1)	14 (24.1)	13 (27.7)	6 (33.3)
HIV/AIDS	9 (12.3)	7 (12.1)	6 (12.8)	2 (11.1)
Other Chronic Health Conditions	46 (63.0)	38 (65.5)	31 (66.0)	12 (66.7)
Mental Health	45 (61.6)	37 (63.8)	30 (63.8)	11 (61.1)
Substance Abuse	46 (63.0)	31 (53.4)	27 (57.4)	15 (83.3)
Number of Disabling Health Conditions				
No Disabling Health Conditions	1 (1.4)	1 (1.7)	1 (2.1)	0 (0)
1 Disabling Health Condition	18 (24.7)	15 (25.9)	9 (19.1)	4 (22.2)
2 Disabling Health Conditions	23 (31.5)	19 (32.8)	15 (31.9)	6 (33.3)
3 Disabling Health Conditions	19 (26.0)	19 (32.8)	18 (38.3)	3 (16.7)
4 or more Disabling Health Conditions	11 (15.1)	4 (6.9)	4 (8.5)	5 (27.8)
Other Special Needs				
Developmental Disability	3 (4.1)	2 (3.4)	1 (2.1)	1 (5.6)
Domestic Violence	17 (23.3)	6 (10.3)	11 (23.4)	2 (11.1)

*Conditions as assessed at program entry; Excludes deceased (n=4).

Housing Stability. Congruent with the federal definition of chronic homelessness, study participants were homeless for long periods before moving into Moore Place (Table 5). Prior to Moore Place, tenants who remained in the study at Year 2 were homeless between 1 and 25 years and the average length of homelessness for tenants was 7 years (SD=5.4). The median length of homelessness was 5 years. Over 20% (n=10) had been homeless 10 or more years prior to moving into Moore Place.

Table 5: Study Participant History of Homelessness

Number of Years Homeless	Baseline (n=73)	Year 1 (n=58)	Year 2 (n=47)	Left program* (n=18)
	n (%)			
1-2 years	9 (12.3)	9 (15.5)	7 (14.9)	1 (5.6)
3-5 years	32 (43.8)	23 (39.7)	18 (38.3)	11 (61.1)
6-10 years	19 (26.0)	15 (25.8)	12 (25.5)	4 (22.2)
11-15 years	6 (8.2)	5 (8.7)	5 (10.6)	1 (5.5)
16-30 years	7 (9.6)	6 (10.3)	5 (10.6)	1 (5.6)

*History as assessed at program entry; Excludes deceased (n=4).

Once housed, two indicators were used to assess the housing stability of study participants: the number of study participants that remained housed at each time period and the income available to support housing costs. Of the 73 tenants who participated in baseline data collection, 79.5% (n=58) remained housed at Moore Place after Year 1. Seventy percent (n=51) remained housed at Year 2. Of the study participants that left Moore Place at Year 2, five tenants left for other permanent housing. This suggests that the housing stability rate among those who participated in the study is 81% (n=56). Four study participants died while at Moore Place and were not included in the housing stability calculation. Ten tenants were asked to leave or evicted. Tenants are asked to leave if they are unable or unwilling to follow the guidelines of their lease, even with staff support and intervention. Table 6 summarizes study participant housing stability during the Evaluation Project.

Table 6: Housing Stability (n=73)

	Year 1	Year 2
	n (%)	
Housed at Moore Place	58 (79.5)	51 (69.9)
Left for other Permanent Housing	3 (4.1)	5 (6.8)
Deceased while at Moore Place	2 (2.7)	4 (5.5)
Stably Housed	61 (85.9)	56 (81.2)
Incarcerated	0(0)	1(1.4)
Evicted/Asked to Leave	10 (13.7)	12 (16.4)

Note: Deceased tenants are not included in the housing stability calculation.

Participant income through employment or benefits and entitlements is another indicator of housing stability, providing clients necessary resources to establish a home and contribute to rent. Repeated measures ANOVA (n=50) results show a statistically significant improvement over time across each of the study periods, F (1.4, 70.4) =14.648, p<.01. Table 7 summarizes the changes in average tenant income during the study.

Table 7: Income Changes across Time, Repeated Measures ANOVA (n=47)

Measure	Baseline	Year 1	Year 2	*F*	*df*	*p*	Greenhouse -Geisser
	M(SD)						
Income	$386.26 (398.22)	$457.57 (396.84)	$688.40 (458.19)	13.965	1.4, 64.0	.000*	.000*

Note. M = mean; SD = standard deviation
*p≤.001

Clinical Stability. The clinical stability of study participants was assessed using a number of standardized instruments. Tenant perceptions of their quality of life may be an indicator of clinical stability. Quality of life was measured using the Wisconsin Quality of Life Index (W-QLI). Of the tenants who participated in all collection periods (n=47), repeated measures analysis of variance (ANOVA) showed that study participants averaged a general satisfaction score of 1.8 (SD=.791) at baseline. Scores for the W-QLI range from -3 (the worst things could be) to +3 (the best things could be). At Year 2, their scores remained the same, despite slight increases at Year 1 (Table 8). The changes over time were not statistically significant. Two factors may account for the relatively high quality of life scores at baseline and the lack of improvement in tenants' general quality of life over time. First, as noted in the study limitations section, baseline measures were captured up to 30 days after tenants moved into Moore Place. Tenant perceptions of their quality of life may have started to change when they moved into or learned they were moving into Moore Place, resulting in higher scores by the time they participated in baseline data collection. Second, tenants continue to address the impact of disabling conditions once housed. Living with and managing disabling health conditions continue to be challenging even with housing and support. These ongoing challenges may prevent improvements in perceived quality of life.

Table 8: Quality of Life over Time, (n=47)

Measure	Baseline	Year 1	Year 2	*F*	*df*	*p*
	M (SD)					
Quality of Life	1.80 (.791)	1.94 (.780)	1.80 (.937)	.754	1.8, 81.5	.459

Note. M = mean; SD = standard deviation

The Modified Colorado Symptom Index (MCSI) and the PTSD Checklist - Civilian Version (PCL-C) were used to assess mental health. Scores for the MCSI range from 0 to 56, with higher scores indicating greater psychiatric symptomology and a clinical cut-off score of 30 and above suggesting the presence of a mental health disorder. Repeated measures ANOVA measured the average change in score across three study time periods. For the 44 tenants who completed this instrument at baseline, Year 1, and Year 2, the average baseline score was 16.0 (SD=12.1), with scores ranging from 0 to 45 and 18% (n=8) scoring 30 or above. At Year 1, their average MCSI score fell to 14.7 (SD=11.1) and at Year 2, the average score fell to 13.8 (SD=10.5). The changes between baseline and Year 2 were not statistically significant.

The scores at Year 2 ranged from 0 to 47 and 11% (n=5) of participating tenants scored 30 and above. Table 9 summarizes the change in MCSI Scores between baseline and Year 2.

The PTSD Checklist - Civilian Version (PCL-C) was administered to tenants by the Moore Place clinical staff and the scores were provided to the research team for analysis. The PCL-C examines trauma-related symptomology. Scores for the PCL-C ranged from 17 to 85, with higher scores suggesting greater symptom severity. Forty-one tenants completed this instrument at baseline, Year 1, and Year 2. For those 51 tenants, repeated measures ANOVA showed the average baseline score was 38.7 (SD=17.6). This average score exceeds suggested PCL cut-point scores for settings frequented by the general population (e.g., civilian primary care; suggested cut-point 30-35) and exceeds or approaches the cut-off scores for a setting like VA primary care (suggested cut-point score 36-44) (U.S. Department of Veteran Affairs [USVA], 2012). The cut-off scores inform clinicians that individuals should be more thoroughly assessed for PTSD. At Year 1, their average PCL-C score fell to 37.7 (SD=17.3) and to 37.5 (SD=19.5) in Year 2, but the changes between time periods were not statistically significant. Table 9 summarizes the change in PCL-C scores between baseline, Year 1, and Year 2. The PCL-C also allows clinicians to determine if an individual meets DSM-IV criteria for post-traumatic stress disorder. The Moore Place clinical services staff determined 14 out of 39 (36%) tenants who participated in data collection at Year 2 met clinical criteria for PTSD.

Table 9: Measures of Mental Health over Time

Measure	Baseline	Year 1	Year 2	*F*	*df*	*p*
	M (SD)					
Modified Colorado Symptom Index (N=45)	16.0 (12.1)	14.7 (11.1)	13.8 (10.5)	.796	1.7, 76.5	.439
PTSD Checklist – Civilian Version (n=41)	38.7 (17.6)	37.7 (17.3)	37.5 (19.5)	.137	1.7, 66.9	.836

Note. M = mean; SD = standard deviation

As an additional indicator of clinical stability, the SF36v2 was administered to study participants to assess perceptions of their own physical and mental health. The SF36v2 produces two summary scores, the Physical Component Summary (PCS) and Mental Component Summary (MCS). Both scores provide a broad perspective on the study participant's perceived health. Higher scores indicate better perceptions of health. A score of 50 on the PCS or MCS indicates the norm of the general population. Component summary

scores suggest that on average, Moore Place tenants have worse perceptions of their mental and physical health than do those in the general population. At Year 2, 62% (n=25) of participating tenants scored below the general population norm on the PCS and 29% (n=12) scored below the general population norm on the MCS. For the 40 tenants that completed the instrument at baseline, Year 1, and Year 2, repeated measures ANOVA results show that the average score of the PCS at baseline was 42.0 (SD=10.4). At Year 1, the average score fell slightly to 41.2 (SD=9.9) and at Year 2, increased slightly to 42.8 (SD=9.9). The changes were not statistically significant. The average score for the MCS at baseline was 46.5 (SD=12.4), and rose slightly to 47.3 (SD=10.5) at Year 1, and rose again at Year 2 to 47.4 (SD=11.8). The increase was not statistically significant. Table 10 summarizes the scores on the SF36v2 through Year 2.

Table 10: Perceived Health and Mental Health over Time

Measure	Baseline	Year 1	Year 2	*F*	*df*	*p*
	M (SD)					
SF36V2 Perceived Physical Health (n=40)	42.0 (10.4)	41.2 (9.9)	42.8 (9.9)	.591	2, 78	.556
SF36V2 Perceived Mental Health(n=40)	46.5 (12.4)	47.3 (10.5)	47.4 (11.8)	.114	2, 78	.893

Note. M = mean; SD = standard deviation

To examine how Moore Place impacted study participant substance use, portions of the Addiction Severity Index (ASI) were administered. The ASI provides a self-reported count of the number of days a person has used a substance over the past 30 days and the number of years a person has used a substance over his or her lifetime. The lifetime use measure was only collected at baseline and reported in the first interim report.

At Year 2, for those who reported using substances, more study participants reported alcohol use than any other substance over the last 30 days (n=27). Among drug use, cannabis and cocaine were the drugs most frequently reported. The number of tenants who reported using alcohol, drinking until intoxication, and using drugs decreased or remained the same from baseline to Year 2. Table 11 summarizes the number of tenants through Year 2 who reported using substances 30 days prior to data collection.

Table 11: Number of Tenants Reporting Substance Use in Last 30 Days

Measure	Baseline	Year 1	Year 2
	n (%)		
Alcohol (n=47)	27 (57.4)	25 (53.2)	24 (51.1)
Alcohol until intoxication (n=46)	18 (39.1)	18 (39.1)	18 (39.1)
Drugs (n=46)	12 (26.1)	9 (19.6)	6 (13.0)

Note. M = mean; SD = standard deviation

Repeated measures ANOVA results show that the average number of days that participating tenants used alcohol fell from 6.5 (SD=10.0) days to 5.8 (SD=9.1) days during the 30 days prior to baseline and Year 2 data collection, respectively. The average number of days participating tenants used alcohol until they felt its effects rose slightly from 3 (SD=6.2) to 4 (SD=7.5). The average number of days that participating tenants used drugs remained the same, 3.8 days, between baseline and Year 2 measurements. The changes between baseline and Year 2 measures were not statistically significant. Table 12 summarizes the change in the average use of substances in the past 30 days.

Table 12: Average Alcohol and Drug Use in Last 30 Days

Measure	Baseline	Year 1	Year 2	*F*	*df*	*p*
	M (SD)					
Alcohol (n=47)	6.5 (10.02)	5.6 (9.7)	5.8 (9.1)	.446	2, 92	.641
Alcohol until intoxication (n=46)	3.0 (6.2)	3.7 (7.8)	4.0 (7.5)	.548	2, 90	.580
Drugs (n=46)	3.8 (10.8)	1.8 (6.3)	3.8 (16.2)	.546	1.7, 76.8	.554

Note. M = mean; SD = standard deviation

Social Stability. Two scales measured the amount of perceived social support that tenants reported from family and friends. The PSS Friends and PSS Family are each 20 item scales and the scale scores range from 0 to 20, with higher scores reflecting more perceived social support. The study participants' average baseline scores were lower than other samples reported on using this instrument. Of note, several participating tenants refused to complete this instrument at baseline stating that they did not have any friends. For the 27 tenants who completed the PSS Friends measure at baseline, Year 1, and Year 2, repeated measures

ANOVA showed an average baseline score of 12.9 (SD=2.52). At Year 1, the average score rose to was 16.4 (SD=8.71), but fell slightly again at Year 2 to 12.6 (SD=3.92). The changes were not statistically significant. For the 26 tenants who completed the PSS Family measure, repeated measures ANOVA found that the average baseline score was 12.7 (SD=3.6). Average scores rose slightly at Year 1 to 13.8 (SD=5.37) and fell slightly at Year 2 to 11.8 (SD=4.42). The change in average scores was not statistically significant. It is important to note that fewer study participants completed the PSS instruments at baseline, Year 1, and Year 2 data collection points. This reduces the response rate and results should be reported with caution. Table 13 summarizes the scores of the PSS Friends and Family through Year 2.

Table 13: Measures of Social Stability over Time

Measure	Baseline	Year 1	Year 2	*F*	*df*	*p*
	M (SD)					
Perceived Social Support Friends (n=27)	12.9 (2.52)	16.4 (8.71)	12.6 (3.92)	3.54	1.2, 31.0	.063
Perceived Social Support Family(n=26)	12.7 (3.6)	13.8 (5.37)	11.8 (4.42)	2.92	1.4, 35.4	.083

Note. M = mean; SD = standard deviation

Qualitative Analyses. During Year 2 interviews, study participants were asked the following open-ended question: "Besides where you sleep, what do you think has changed the most for you now that you have your own apartment?" Responses were analyzed thematically and fell under eight categories detailed below. Tenants who participated in the study expressed that their ability to accomplish tasks or goals, their health, their housing, their mental health, their relationships, their safety, and their way of living changed for the better because of moving into Moore Place. Table 14 summarizes the major categories and subcategories from the analysis along with exemplar quotations from the tenant responses.

Table 14: Qualitative Analysis – What has changed the most?

Category	Subcategories & Examples of Tenant Responses
Everything	"Just love my apartment - everything!"
	"My life changed for the better."
Accomplishment	"Gained employment. Feel happier because I have income, ability to buy things for myself and work on my goals."
	"Ready to move on to the next stage, level"
Health	Health is Better

Category	Subcategories & Examples of Tenant Responses
	"Health much better."
	Health Behaviors "My health. I stopped smoking." "Being drug free. Thinking clearly." "Cut down on alcohol." "My diet - a key part of my health."
	Personal Care "Clean. Shower." "I'm happy cause I don't have to be outside. I can bathe."
	Health is Worse "Health has gotten worse, but hopeful." "Physical health has gotten worse slightly."
Housing	"Got a roof over my head. Better than out in woods or under a bridge (10-11 years outside)." "Having a place to stay." "Having my own home after what I've been through I am able to have a home life again. When you get on the street you lose your home!" "Not out in the cold. Not sleeping in a shed. Very happy to be where I am now. Thank God."
Mental Health	**Attitude & Outlook** "More relaxed. More content with my life." "My life. Happy, at peace, more loving person." "My attitude - more positive, more grateful, more thankful." "My outlook on life - I learned to appreciate and take things more seriously."
	View of Self "Everything has changed - more confident, self-love, independent." "Appearance and the way I feel about myself." "You gain your [solidarity] self-respect… By being here, it gives you solidarity (not quite the right word, looking for the right word, but can't find it). Really improved my mental health."
	Peace of Mind "I can go in my room and I'm home. You gain peace." "When I lie down in peace." "My life. Happy, at peace, more loving person."
Relationships	**General** "Interactions with my neighbors." "Positive women in life. Feeling part of."
	Family "It's more important to be with my family. I shared more time with them sometimes up to a week at the time. I'm happy!!!" "I can see my grandkids and can play with them."
Safety	"I don't have to worry about being on the streets. I can lock my door, feel safe." "I feel secure."
Way of Life	**Independence & Privacy** "Being able to take on responsibilities."

Category	Subcategories & Examples of Tenant Responses
	"I feel like I got my freedom again." "There's no snoring."

Tenants were also asked to respond to two questions regarding Moore Place at Year 2. First, tenants were asked, "What do you think Moore Place does well?" Initial thematic analysis suggested six response categories. Notably, 20 study participants responded that Moore Place staff are a key strength of the program. Table 15 summarizes the major categories from the analysis of responses at Year 2 along with exemplar quotations from the tenant responses.

Table 15: Qualitative Analysis – What does Moore Place do well?

Category	Examples of Tenant Responses
Everything	"Everything."
	"All."
	"Great here."
Activities	"Keep us busy."
	"Providing activities."
Assistance	"Help to live again. Regain your life back. Here to support your plan. "Back bone"
	"Provide a support system for handling different problems that come up - services that need attention."
	"Helps reunite with your families and friends. Counseling is excellent. Medical is fantastic."
	"Having the nurse helping me."
Housing & Facility	"Give you a place to stay."
	"Provide housing for people - it's the smartest answer to homelessness - saves money and saves lives. Support services are good."
Safety	"Provides a safe environment and help in getting things done."
Staff	"They are efficient in what they do. And they love and care for residents."
	"Caring, helpful in every area and they treat you well…the way you treat them. They are caring."
	"Staff & volunteers are swell! They are awesome and the tenants are awesome. And the activities are awesome. Happy place to be. They have an awesome love - feeling in all they do. They are my angels."
	"Staff treat me like a person. They help you if you want it."
	"Staff seems to open up to you - They let you know no matter what is happening in your life - whether it is good or bad - you are not alone."
	"Get in your business."

Third, tenants were asked, "What improvements do you think that Moore Place needs to make to better serve its residents?" Initial thematic analysis suggested six response categories. Twenty-one study participants stated that there was nothing to improve. Table 16 summarizes the major categories from the analysis of responses at Year 2 along with exemplar quotations from the tenant responses.

Table 16: Qualitative Analysis – What can Moore Place improve?

Category	Examples of Tenant Responses
Nothing – Keep it up!	"Keep on keeping the motor running."
	"Keep doing what doing. Doing great job!"
	"None - if it ain't broke, don't fix it."
	"Build more housing for other people outside."
Activities	"More cookouts."
	"Better services to assist residents in getting their GED's."
Assistance	"Some of the most disabled people need checking in on more often because they can have problems that no one is aware of for a day or two."
	Food "They should build a soup kitchen around here so we don't need to go all the way to Urban Ministry." "I would appreciate more food everyday - if they provide breakfast and dinners." "To have lunches. You can only cook so much out of the microwave."
	Specialized Services "Need substance abuse counselors." "Need employment specialists." "Also, need eye specialists to check on folks here."
	Transportation "Increase availability of transportation."
Building	"Move smoking area."
	"A weight room."
	"Washing machines need to be sanitized."
	"Too much traffic in and out in the night - 2 - 3 am."
	"Moore Place needs more monitoring after hours - ie. crank phone calls - so MP can continue to be a safe place after the staff leaves."
Neighbors	**General** "Some residents no showering and taking care of themselves." "Get a group who pay rent. Stop prostitution here." "Some of the people."
	Substance Use "I wish they would take care of the alcohol and drug problems in the place. Have to force people to go to our programs."

Category	Examples of Tenant Responses
Relationships/ Interactions with Tenants	"Be more strict with residents who use alcohol/drugs - get them in treatment." "Keep crack heads out. They are thieves and liars. They steal food, phones, money. I have had three phones stolen."
	"Take time to find out what is going on with each individual."
	"…ask more opinions from residents. Address situations sooner."
	"Stop making decisions when you don't live here (ex. downstairs bathroom locked…)."
	"Stop being afraid of being close to the tenants. Being close doesn't mean we are going to use you."

Part 2: Hospital System Utilization Study

Tenant utilization of emergency-related services in two area hospital systems was analyzed for the two years prior and the two years following a participating tenant's move into Moore Place. To examine emergency room (ER) utilization and resulting hospitalizations, itemized bills and service use dates were collected from Carolinas HealthCare System (CHS) and Novant Health for participating tenants. Outpatient utilization of CHS was also analyzed using itemized bills. While a few tenants have medical homes outside CHS (e.g., Novant Health, Veterans Administration), most tenants established medical homes through a partnership with CHS. Thus, outpatient analyses only included CHS.

Response Rate. Tenant participation in Part 2 of the study was high throughout all phases of data collection. Of the 85 tenants of Moore Place, 74 (87%) tenants participated in the first phase of data collection. In the second phase, 62 tenants participated (84%) and in the third phase of data collection, 50 tenants participated for response rate of 68%. High response rates suggest that the research findings are reflective of the population sampled, in this case the tenants of Moore Place. Table 17 describes the response rates across study periods.

Table 17: Response Rates for Hospital Utilization Study

(N=85)	Baseline	Year 1	Year 2
	n (%)		
Participated in Study	74 (87.1)	62 (83.8)	50 (67.6)
Declined to Participate	11 (12.9)	0 (0)	0 (0)
Participants Left Program/Deceased	0 (0.0)	12 (16.2)	24 (32.4)

Characteristics of Study Participants. Demographic information gathered at baseline suggests that participants in the hospital utilization portion of the study are similar to those who participated in Part 1 of the study. Table 18 details the demographic characteristics of study participants at program intake, Year 1, and Year 2.

Table 18: Characteristics of Participants in Hospital Utilization Study

	Baseline (n=74)	Year 1 (n=62)	Year 2 (n=50)	Left Program
	n (%)			
Gender				
Female	21(28.4)	19	15(30.0)	6(25.0)
Male	53(71.6)	43	35(70.0)	18(75.0)
Race				
American-Indian	1(1.4)	1(1.6)	0(0)	1(4.2)
Black or African-American	46(62.2)	39(62.9)	33(66.0)	13(54.2)
White	27(36.5)	22(35.5)	17(34.0)	10(41.7)
Ethnicity				
Non-Hispanic/Non-Latino	73(1.4)	61(98.4)	49(98.0)	24(100.0)
Hispanic/Latino	1(98.6)	1(1.6)	1(2.0)	0(0)
Age at Move-In				
19-39	4 (5.4)	3(4.8)	1(2.0)	3 (12.5)
40-49	18 (24.3)	16(25.8)	12(24.0)	6 (25.0)
50-64	50 (67.6)	41(66.1)	35(70.0)	15 (62.5)
65+	2(2.7)	2(3.2)	2(4.0)	0 (0.0)
Veteran	10 (13.5)	9 (14.5)	7 (14.0)	3 (12.5)

Study participants entered Moore Place with a variety of health-related disabling conditions, including health conditions physical disabilities, HIV, mental health and substance abuse conditions, and other chronic health conditions. As noted in the description of the research methodology, these conditions were indicated by the referring clinician or case manager and updated on a quarterly basis by Moore Place clinical staff. The health and other needs of study participants are summarized in Table 19 below.

Table 19: Participant Disabling Conditions in Hospital Utilization Study

Condition/Need	Baseline (n=74)	Year 1 (n=62)	Year 2 (n=50)
	n (%)		
Disabling Health Conditions			
Physical Disability	20 (27.0)	17 (27.4)	14 (28.0)
HIV/AIDS	9 (12.2)	8 (12.9)	6 (12.0)
Other Chronic Health Conditions	45(60.8)	40 (64.5)	32 (64.0)
Mental Health	47 (63.5)	39 (62.9)	32 (64.0)
Substance Abuse	45 (60.8)	36 (58.1)	28 (56.0)

Number of Disabling Health Conditions			
No Disabling Health Conditions	1 (1.4)	1 (1.6)	0(0)
1 Disabling Health Condition	22 (29.7)	17 (27.4)	14 (28.0)
2 Disabling Health Conditions	21 (28.4)	18 (29.0)	16 (32.0)
3 Disabling Health Conditions	19 (25.7)	17 (27.4)	14 (28.0)
4 or more Disabling Health Conditions	11 (14.9)	9 (14.5)	6 (12.0)
Developmental Disability	3 (4.1)	3 (4.8)	1 (2.0)

Emergency Room Utilization. Among the tenants that approved the release of information the two years prior to and the two years following their move into Moore Place (n=50), there were 648 fewer ER visits in the two years following their move into Moore Place than there were the two years prior, an 81% reduction. Table 20 describes total participant ER utilization in the two years prior and two years following tenants' moves into Moore Place.

Table 20: Total Participant ER Visits, 2 Years Pre/Post (n=50)

Measure	2 Years Pre	2 Years Post	% Change
Carolinas HealthCare System	555	130	-77
Novant Health	249	26	-90
Combined Health Systems	804	156	-81

In the 2 years prior to their move to Moore Place, the number of emergency room visits by study participants ranged from 0 to 227 visits. In the 2 years following their move to Moore Place, the number of emergency room visits ranged from 0 to 33 visits. Paired sample *t* tests found that the average number of ER visits decreased from 16.1 (SD=39.06) for the two years prior to entering Moore Place to 3.1 (SD=5.27) for the two years following the move into Moore Place, a statistically significant reduction, $t=2.606$ (49) $p<.05$. Table 21 describes the changes in average ER utilization 2 years before and after moving into Moore Place.

Table 21: Average Participant ER Visits, 2 Years Pre/Post (n=50)

Hospital System	2 Years Pre	2 Years Post	t	*df*	*p*
	M (SD)				
Carolinas HealthCare System	11.1 (22.97)	2.6 (5.21)	3.133	49	.003**
Novant Health	5.0 (16.58)	0.52 (1.03)	1.893	49	.064
Combined Health Systems	16.1 (39.06)	3.1 (5.27)	2.606	49	.012*

Note. M = mean; SD = standard deviation
*p<.05. **p<.01.

Hospitalizations Resulting from Emergency Room Visits. Among the tenants that approved the release of information the two years prior to and the two years following their move into Moore Place (n=50), there were 292 fewer inpatient days resulting from ER visits in the two years following their move into Moore Place than there were the two years prior, a 62% reduction (See Table 22).

Table 22: Total Inpatient Days Originating from ER Visits, 2 Years Pre/Post (n=50)

Hospital System	2 Years Pre	2 Years Post	% Change
Carolinas HealthCare System	356	174	-51
Novant Health	114	4	-96
Combined Health Systems	470	178	-62

In the 2 years prior to their move to Moore Place, the number of inpatient days following ER visits ranged from 0 to 95 days. In the two years following their move to Moore Place, the number of inpatient days resulting from ER visits ranged from 0 up to 79 days. Paired sample *t* tests demonstrated that the average number of inpatient days decreased from 9.4 (SD=17.70) for the two years prior to entering Moore Place to 3.6 (SD=11.60) for the two years following the move into Moore Place, a statistically significant reduction, t=2.039 (49) p<.05. Table 23 describes the changes in the average number of inpatient days originating from an ER Visit by hospital system.

Table 23: Average Number of Inpatient Days, 2 Years Pre/Post (n=50)

Measure	2 Years Pre	2 Years Post	t	*df*	*p*
	M (SD)				
Carolinas HealthCare System	7.1 (15.60)	3.48 (11.56)	1.416	49	.163
Novant Health	2.3 (7.53)	0.1 (0.44)	2.058	49	.045*
Combined Health Systems	9.4 (17.70)	3.6 (11.60)	2.039	49	.047*

Note. M = mean; SD = standard deviation
*$p<.05$.

Billed Amounts for Emergency Room Related Utilization. Among participating tenants the total amount billed for ER-related utilization was $3.6 million two years prior to their move into Moore Place. The two years after the tenants moved into Moore Place, their total bill fell 68% to $1.1 million, a $2.4 million reduction. The total bill amount for ER-related utilization is described by hospital system in Table 24.

Table 24: Total Bill Amount for ER-Related Utilization, 2 Years Pre/Post (n=50)

Hospital System	2 Years Pre-Moore Place	2 Years Post-Moore Place	% Change
Carolinas HealthCare System	$2,860,257	$1,043,460	-64
Novant Health	$691,746	$83,043	-88
Combined Health Systems	$3,552,003	$1,126,502	-68

In the 2 years prior to their move to Moore Place, the tenants' annual billed amounts ranged from $0 to $621,958. In the two years following their move to Moore Place, their annual billed amounts ranged from $0 to $150,511. Paired sample *t* tests showed that the average annual billed amount fell from $71,040 (SD=127922) for the two years prior to entering Moore Place to $22,530 (SD=35647), a $48,510 reduction for the two years following the move into Moore Place, a statistically significant reduction, $t=2.864$ (49) $p<.01$. See Table 25 below.

Table 25: Average Participant Bill Amount, 2 Years Pre/Post (n=50)

Hospital System	2 Years Pre	2 Years Post	t	*df*	*p*
	M (SD)				
Carolinas HealthCare System	$57,205 (97,565)	$20,869 (34,355)	2.840	49	.007**
Novant Health	$13,835 (41,081)	$1,661 (4,307)	2.078	49	.043*
Combined Health System	$71,040 (127,922)	$22,530 (35,647)	2.864	49	.006**

Note. M = mean; SD = standard deviation
*$p<.05$. **$p<.01$.

Payment Sources for Emergency Room Related Utilization. Payment sources applied to the billed amount for ER related utilization were examined for Carolinas HealthCare System and Novant Health. Payments are defined as remuneration by the patient, reimbursement by a third party, or as a discount applied by the hospital system. During the two years prior to tenant moves into Moore Place, there were 228 payments from five sources to Carolinas HealthCare System. The majority of these payments were from an Uninsured Discount (75, 33%), Medicaid or Medicare (72, 32%), or Charity Care (65, 29%). The uninsured discount, sliding scale, and Charity Care are payments borne by the hospital system. In the two years following participating tenant moves into Moore Place, there were 58 payments from four sources to Carolinas HealthCare System. The majority of these payments were from Medicaid or Medicare (51, 88%). See Table 26.

Table 26: Payment Sources for ER Utilization (n=50)

Carolinas HealthCare System	2 Years Prior	1 Year Prior	1 Year Post	2 Years Post
	n (% of payments)			
Charity Care	65 (28.5)	50(15.4)	1(1.4)	2(3.4)
Mecklenburg County	1(0.4)	10(3.1)	0(0)	4(6.9)
Uninsured Discount	75(32.9)	28(8.6)	4(5.6)	0(0)
Sliding Scale	15(6.6)	25(7.7)	5(6.9)	1(1.7)
Medicaid/Medicare	72(31.6)	208(64.2)	62(86.1)	51(87.9)
CHS Interco	0(0)	1(0.3)	0(0)	0(0)
Jail	0(0)	1(0.3)	0(0)	0(0)
Access1	0(0)	1(0.3)	0(0)	0(0)
Total Number of Payments	228	324	72	58

During the two years prior to tenant moves into Moore Place, there were 137 payments from two sources to Novant Health. The payments were from Charity (70, 51%) and Medicaid or Medicare (67, 49%). In the two years following participating tenant moves into Moore Place, there were 10 payments from three sources to Novant Health. The majority of these payments were from Medicaid or Medicare (n=6, 60%) or Charity (n=3, 30%). See Table 27.

Table 27: Payment Sources for ER Utilization (n=50)

Novant Health	2 Years Prior	1 Year Prior	1 Year Post	2 Years Post
	n(% of payments)			
Charity	70(51.1)	32(30.8)	5(35.7)	3(30.0)
Medicaid/Medicare	67(48.9)	69(66.3)	8(57.1)	6(60.0)
Other Government Pay	0(0)	0(0)	0(0)	0(0)
Self-pay Discount	0(0)	1(1.0)	1(7.1)	0(0)
Mecklenburg County	0(0)	2(1.9)	0(0)	1(10.0)
Total Number of Payments	137	104	14	10

Outpatient Visits. Outpatient utilization patterns were also examined at Carolinas HealthCare System. Upon move-in, tenants who are not already connected to a primary care physician establish a medical home through a partnership with CHS. Since the majority of Moore Place tenants have established relationships with Carolinas HealthCare System physicians and due to feasibility issues, outpatient utilization was only examined for CHS. Outpatient visits included primary care appointments, planned procedures, and appointments with psychiatrists and other mental health professionals. Pharmacy bills were also calculated but not considered as separate outpatient visits since they occurred in conjunction with other outpatient events. In the two years prior to their move into Moore Place, study participants used outpatient services 389 times. In the two years after they moved into Moore Place, tenants used outpatient services 596 times, a 53% increase. See Table 28.

Table 28: Total Outpatient Visits CHS, 2 Years Pre/Post (n=50)

Measure	2 Years Pre	2 Years Post	% Change
Total Number of Outpatient Visits	389	596	53
Total Number of Surgeries	12	14	17
Total Number of Pharmacy Visits	146	157	8
Total Bill Amount	$432,147	$1,106,370	156

In the two years prior to their move to Moore Place, the number of outpatient visits per tenant ranged from 0 to 62 visits. In the 2 years following their move to Moore Place, the number of outpatient visits per tenant ranged from 0 to 34 visits. Paired sample *t* tests found that the average number of outpatient visits increased from 7.8 (SD=11.94) for the two years prior to entering Moore Place to 11.9 (SD=8.4) for the two years following the move into Moore Place, a statistically significant increase, *t*=-2.866 (49) *p*<.01. See Table 29.

Table 29: Average Outpatient Visits CHS, 2 Years Pre/Post (n=50)

Measure	2 Years Pre	2 Years Post	*t*	*df*	*p*
	M (SD)				
Average Number of Outpatient Visits	7.8 (11.94)	11.9 (8.4)	-2.866	49	.006**
Total Number of Surgeries	0.24 (0.66)	0.28 (0.50)	-0.375	49	.709
Average Number of Pharmacy Visits	2.9 (4.76)	3.1 (4.61)	-0.334	49	.740

Note. M = mean; SD = standard deviation
*p<.01

Billed Amounts for Outpatient Services. The total billed amount for outpatient utilization was $674,223 more in the two years following their move into Moore Place than it was the two years prior, a 156% increase. See Table 30.

Table 30: Total Outpatient Bill Amount CHS, 2 Years Pre/Post (n=50)

Measure	2 Years Pre	2 Years Post	% Change
Total Bill Amount	$432,147	$1,106,370	156

In the 2 years prior to their move to Moore Place, the tenants' annual billed amounts ranged from $0 to $68,131. In the 2 years following their move to Moore Place, their annual billed amounts ranged from $0 to $144,438. Paired sample *t* tests demonstrated that the average annual billed amount rose from $8,643 (SD=15990) for the two years prior to entering Moore Place to $22,127 (SD=29040) for the two years following the move into Moore Place, a statistically significant increase, *t*=-2.882 (49) *p*<.01. See Table 31.

Table 31: Average Outpatient Bill Amount CHS, 2 Years Pre/Post (n=50)

Measure	2 Years Pre	2 Years Post	t	*df*	*p*
	M (SD)				
Average Bill Amount	$8,643 (15990)	$22,127 (29040)	-2.882	49	.006**

Note. M = mean; SD = standard deviation
*$p<.05$. **$p<.01$. ***$p\leq.001$

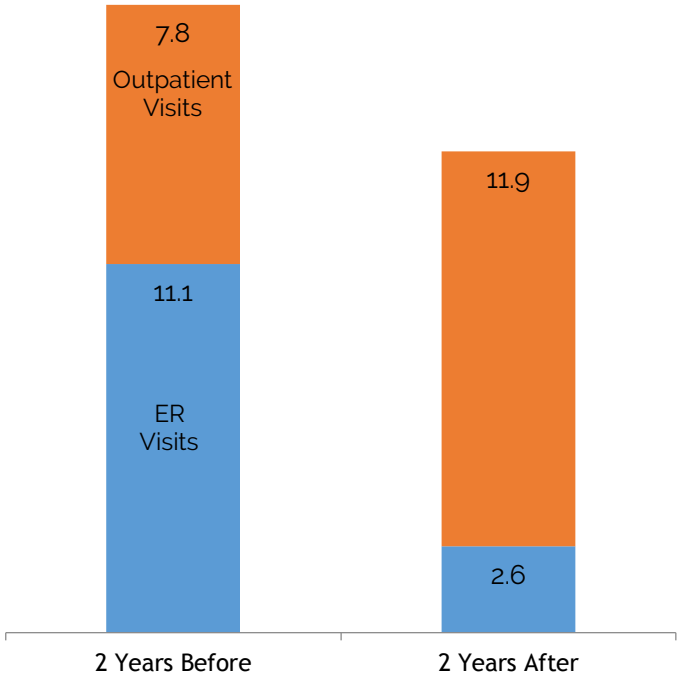
Payment Sources for Outpatient Utilization. Payment sources for outpatient utilization were also examined for Carolinas HealthCare System. As with ER-related utilization data, payment is defined as remuneration by the patient, reimbursement by a third party, or as a discount applied by the hospital system. The uninsured discount, sliding scale, and Charity Care are payments borne by the hospital system. During the two years prior to tenant moves into Moore Place, there were 202 payments from five sources to Carolinas HealthCare System. The majority of these payments were from Medicaid or Medicare (n=89, 44%), Sliding Scale Discount (n=82, 40.6%), or Charity Care (n=26, 10%). In the two years following participating tenant moves into Moore Place, there were 297 payments from five sources to Carolinas HealthCare System. The majority of these payments were from Medicaid or Medicare (n=198, 67%) and a sliding scale discount (n=71, 23.9%). Table 32 describes the payment sources for outpatient utilization at CHS.

Table 32: Payment Sources for Outpatient Utilization (n=50)

Measure	2 Years Prior	1 Year Prior	1 Year Post	2 Years Post
	n(% of payments)			
Uninsured Discount	10(5.0)	8(3.2)	5(1.2)	11(3.7)
Medicaid/Medicare	89(44.1)	144(57.6)	230(56.5)	198(66.7)
Sliding Scale	82(40.6)	64(25.6)	162(39.8)	71(23.9)
Ryan White	2(1.0)	8(3.2)	9(2.2)	0(0)
Charity Care	19(9.4)	26(10.4)	0(0)	10(3.4)
CHS Interco	0(0)	0(0)	1(0.2)	0(0)
Mecklenburg County	0(0)	0(0)	0(0)	7(2.4)
Total Number of Payments	202	250	407	297

Carolinas HealthCare System Hospital Utilization. Combined ER-related utilization and outpatient utilization were compared for Carolinas HealthCare System (CHS) two years before and two years after Moore Place in order to understand changes in health utilization behaviors by Moore Place tenants. As noted above, average ER-related utilization of CHS decreased and outpatient utilization of CHS increased. On average, Moore Place tenants visited CHS 18.9 (SD=26.4) times in the 2 years before moving into Moore Place and over half of visits were in the emergency department (11.1, 59%). After moving into Moore Place, tenants visited CHS an average of 14.5 (SD=10.6) times and the majority of visits were outpatient (11.9, 82%). Figure 10 depicts the change in how Moore Place tenants utilized healthcare services at CHS.

Figure 10: Average ER and Outpatient Visits, 2 Years Pre/Post (n=50)



Despite the increase in outpatient utilization, overall utilization of CHS decreased. The average number of combined ER and outpatient visits and the average combined billed amounts decreased. The changes were approaching statistical significance suggesting a trend in the reduction of overall hospital utilization. Table 33 shows the results of Paired sample *t* tests for CHS utilization two years prior and two years following tenant moves into Moore Place.

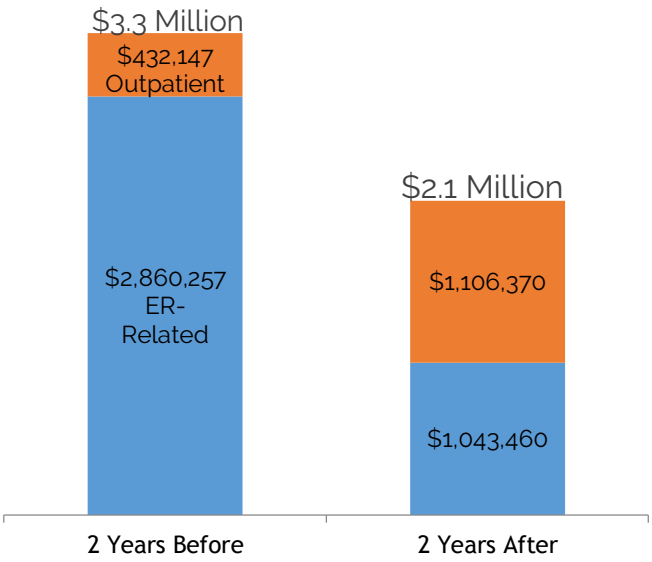
Table 33: CHS ER and Outpatient Utilization, 2 Years Pre/Post (n=50)

Measure	2 Years Pre	2 Years Post	t	*df*	*p*
	M (SD)				
Average Number CHS Visits (ER and Outpatient)	18.9 (26.48)	14.5 (10.55)	1.61	49	.113
Average Billed Amount	$65,848 (100,660)	$42,997 (45,573)	1.98	49	.053

Note. M = mean; SD = standard deviation

The total bill amounts associated with the increased use of outpatient services and ER-related utilization are less than the billed amount of ER alone prior to tenants' moves into Moore Place outpatient and ER-related utilization. Figure 11 shows the reduction in the total billed amounts for combined CHS ER and outpatient utilization.

Figure 11: Reduction in Total CHS ER & Outpatient Bill Amounts, 2 Years Pre/Post (n=50)



Differences in average outpatient utilization were also compared across three time periods: One year before tenants moved into Moore Place, one year after tenants moved in, and two years after tenants moved in. Repeated measures ANOVA results show statistically significant changes overtime, F (1.6, 80.8)=3.55, p=.042. Average outpatient utilization increased from 4.4 (SD=7.0) during the year before tenants moved into Moore Place to 6.9 (SD=6.70) the year after they moved into Moore Place, t=-3.48 (49) p=.001. The increase was statistically significant. Average outpatient utilization decreased between the first year and the second year after tenants moved into Moore Place from 6.9 (SD=6.70) to 5.0 (SD=4.17) visits. The change was approaching statistical significance suggesting a possible trend in the reduction of outpatient utilization in the second year of tenancy, t=1.80 (50) p=.078. Figure 12 depicts changes in average outpatient visits as well as average ER visits. Table 34 summarizes the changes in average CHS hospital utilization over three time periods.

Figure 12: Average CHS ER & Outpatient Utilization across Time (n=50)

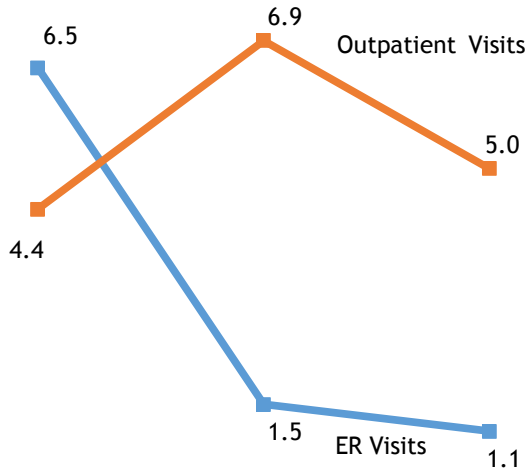


Table 34: Average CHS ER & Outpatient Utilization across Time (n=50)

Measure	Baseline	Year 1	Year 2	*F*	*df*	*p*
	M (SD)					
CHS ER Visits	6.5 (13.4)	1.5 (4.0)	1.1 (1.7)	9.90	1.1, 51.7	.002*
CHS Outpatient Visits	4.4 (7.0)	6.9 (6.70)	5.0 (4.17)	3.55	1.6, 80.8	.042**

Note. M = mean; SD = standard deviation
*$p<.01$, **$p<.05$

When the average bill amounts were compared across three time periods, repeated measures ANOVA results showed differences approaching significance, F (1.7, 83.3) = 2.27, p=.119. Average outpatient bill amounts increased from $7,131 (SD=14,701) during the year before tenants moved into Moore Place to $14,667 (SD=26,640) the year after they moved into Moore Place, t=-1.78 (49) p=.082. The increase was not statistically significant. However again, it was approaching significance. Average outpatient utilization decreased between the first year and the second year after tenants moved into Moore Place from $14,667 (SD=26,640) to $7,460 (SD=15,019). The change was not statistically significant, t=1.59 (49) p=.118. Figure 13 depicts results from the repeated measures ANOVA for average CHS ER-related and outpatient bill amounts. Table 35 summarizes the changes in average CHS hospital utilization over the study time period.

Figure 13: Average CHS ER & Outpatient Utilization Bill Amounts across Time (n=50)

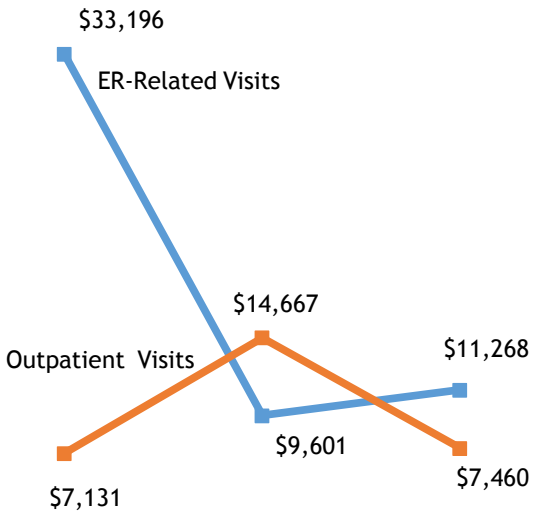


Table 35: Average CHS ER & Outpatient Bill Amount across Time (n=50)

Measure	Baseline	Year 1	Year 2	*F*	*df*	*p*
	M (SD)					
CHS ER-Related Bill Amount	$33,196 (56,060)	$9,601 (18,681)	$11,268 (21,784)	8.24	1.2, 61.0	.003*
CHS Outpatient Bill Amount	$7,131 (14,701)	$14,667 (26,640)	$7,460 (15,019)	2.27	1.7, 83.3	.119

Note. M = mean; SD = standard deviation
*$p<.01$

Part 3: Medic Utilization Study

Tenant utilization of Mecklenburg County Medic services was analyzed for the two years prior and the two years following a participating tenant's move into Moore Place. Medic administrative data were used to examine Medic calls, transports, transport destinations, and payment sources.

Response Rates. The Medic Utilization portion of the study was added to the Evaluation Project after Year 1 of the study. Urban Ministry Center staff approached tenants participating in the hospital utilization portion of the study and asked if they were willing to sign a release of information form for Medic. Of the original 85 tenants, 50 tenants participated in the hospital utilization portion of the study at Year 2. Of those participants, 47 (55.3%) agreed to participate in the Medic portion of the study, an acceptable response rate. High response rates suggest that the research findings are reflective of the population sampled, in this case the tenants of Moore Place. Table 36 describes the response rates for the Medic portion of the study.

Table 36: Response Rate for Medic Study

(N=50)	Year 2
	n (%)
Participated in Study	47 (55.3)
Declined to Participate	3 (3.5)

Characteristics of Study Participants. Demographic information gathered at baseline suggests that, like in other portions of the study, the majority of Year 2 study participants identify as male (31, 66%) and most identified as African-American or Black (31, 66%). The majority of participating tenants were between the ages of 50 and 64 (32, 68%). Seven tenants (14%) identified as veterans. Table 37 details the demographic characteristics of study participants at Year 2.

Table 37: Characteristics of Study Participants in Medic Study (n=47)

Characteristic	Year 2
	n (%)
Gender	
Female	16(34.0)
Male	31(66.0)

Characteristic	Year 2
Race	
American-Indian	0(0)
Black or African-American	31(66.0)
White	16(34.0)
Ethnicity	
Non-Hispanic/Non-Latino	46(97.9)
Hispanic/Latino	1(2.1)
Age at Move-In	
19-39	2(4.3)
40-49	11(23.4)
50-64	32(68.1)
65+	2(4.3)
Veteran	6(12.8)

As noted in previous portions of the Evaluation Project, study participants entered Moore Place with a variety of health-related disabling conditions, including physical disabilities, HIV/AIDS, mental health and substance abuse conditions, and other chronic health conditions. These conditions were indicated by the referring clinician or case manager and updated on a quarterly basis by Moore Place clinical staff. The health and other needs of study participants are summarized in Table 38 below.

Table 38: Participant Disabling Conditions in Medic Study (n=47)

Condition/Need	Year 2
	n (%)
Disabling Health Conditions	
Physical Disability	13(27.7)
HIV/AIDS	6(12.8)
Other Chronic Health Conditions	30(63.8)
Mental Health	29(61.7)
Substance Abuse	26(55.3)
Number of Disabling Health Conditions	
No Disabling Health Conditions	0(0)
1 Disabling Health Condition	14(29.8)
2 Disabling Health Conditions	14(29.8)
3 Disabling Health Conditions	13(27.7)
4 Disabling Health Conditions	6(12.8)
Developmental Disability	1(2.1)

Medic Calls and Transports. Medic calls are events in which 911 is called for a tenant's emergency medical condition. Medic calls may or may not result in a Medic transport to a local emergency department. Among the tenants that participated in the Medic portion of the study (n=47), there were 312 fewer Medic Calls in the two years following their move into Moore Place than there were the two years prior, an 76% reduction. See Table 39.

Table 39: Total MEDIC Calls and Transports, 2 Years Pre/Post (n=47)

Measure	2 Years Pre	2 Years Post	% Change
Total Number of Calls	412	100	-76
Total Number of Transports	399	95	-76

In the 2 years prior to their move to Moore Place, the number of Medic calls per person ranged from 0 up to 153 calls. In the 2 years following their move to Moore Place, the number of Medic calls ranged from 0 up to 24 calls. Paired sample *t* tests found that the average number of Medic calls decreased from 8.8 (SD=23.24) for the two years prior to entering Moore Place to 2.1 (SD=4.48) for the two years following the move into Moore Place, a statistically significant reduction, t=2.288 (46) p<.05.

Table 40: Average MEDIC Calls and Transports, 2 Years Pre/Post (n=47)

Measure	2 Years Pre	2 Years Post	t	*df*	*p*
	M (SD)				
Average Number of Calls	8.8 (23.24)	2.13 (4.48)	2.288	46	.027*
Average Number of Transports	8.49 (22.94)	2.02 (4.26)	2.259	46	.029*

Note. M = mean; SD = standard deviation
*p<.05.

Medic transports are events in which 911 is called for an emergency medical condition and the tenant was transported to an emergency department. Among the tenants that participated in the Medic portion of the study (n=47), there were 304 fewer Medic transports in the two years following their move into Moore Place than there were the two years prior, an 76% reduction. See Table 39.

In the two years prior to their move to Moore Place, the number of Medic transports per tenant ranged from 0 up to 151 transports. In the two years following their move to Moore Place, the number of Medic transports ranged from 0 up to 24 visits. Paired sample *t* tests

found that the average number of Medic calls decreased from 8.5 (SD=22.94) for the two years prior to entering Moore Place to 2.0 (SD=4.26) for the two years following the move into Moore Place, a statistically significant reduction, t=2.259 (46) p<.05. See Table 40.

Differences in average Medic utilization were also compared across three time periods: One year before tenants moved into Moore Place, one year after tenants moved in, and two years after tenants moved in. Repeated measures ANOVA results show statistically significant changes overtime for calls, F (1.0, 47.1)=4.79, p=.033, and for transports, F (1.0, 47.0)=4.84, p=.032. Average Medic calls decreased from 4.3 (SD=11.3) during the year before tenants moved into Moore Place to 1.2 (SD=3.0) the year after they moved into Moore Place. The decrease was statistically significant, t=2.33(46) p=.024. Calls decreased further between the first year and the second year after tenants moved into Moore Place from 6.9 1.2 (SD=3.0) to 0.9 (SD=1.87) calls, although the changes between the first and second year of tenancy were not statistically significant, t=1.01(46) p=.319. Analysis of Medic transports over time suggests a similar pattern. Figure 14 depicts changes in average Medic utilization. Table 41 summarizes the changes in average Medic utilization over three time periods.

Figure 14: Average Medic Utilization across Time (n=47)

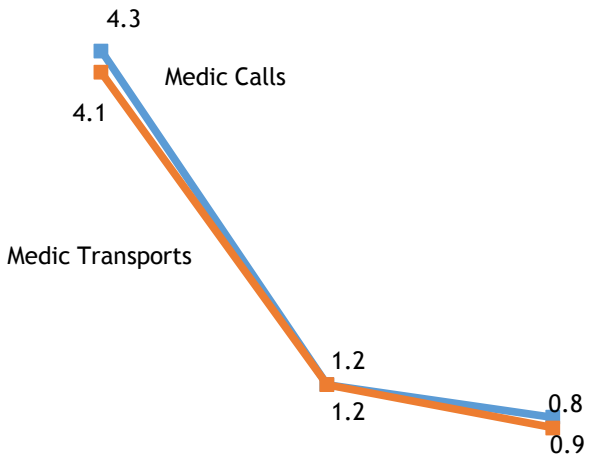


Table 41: Average Medic Utilization across Time (n=47)

Measure	Baseline	Year 1	Year 2	*F*	*df*	*p*
	M (SD)					
Medic Calls	4.3 (11.3)	1.2 (3.0)	0.9 (1.87)	4.79	1.0, 47.1	.033*
Medic Transports	4.1 (11.1)	1.2 (3.0)	0.8 (1.64)	4.84	1.0, 47.0	.032*

Note. M = mean; SD = standard deviation
*p<.05

Transport Destinations. Transport destinations for participating tenants using Medic were also examined. During the two years prior to tenant moves into Moore Place, there were 204 tenant transports to four Carolinas HealthCare System locations and three Novant Health locations. The majority of destinations were to CHS locations (n=130, 63.7%). The majority of transports were taken to CMC Main (n=93, 45.6%) and Novant Health Main (n=66, 32.3%). In the two years following participating tenant moves into Moore Place, there were 40 tenant transports to four Carolinas HealthCare System locations and one Novant Health location. The majority of destinations were again to CHS locations (n=34, 85%). The majority of transports were taken to CMC Main (n=29, 72.5%).

Table 42: Destinations for Medic Utilization (n=47)

Measure	2 Years Prior	1 Year Prior	1 Year Post	2 Years Post
	n (% of payments)			
CMC Main	93(45.6)	112(57.1)	41(73.2)	29(72.5)
CMC Mercy	19(9.3)	22(11.2)	3(5.4)	3(7.5)
CMC Pineville	7(3.4)	2(1.0)	0(0)	1(2.5)
CMC Steel Creek	0(0)	0(0)	1(1.8)	0(0)
CMC University	11(5.4)	11(5.6)	2(3.6)	1(2.5)
Total CHS Destinations	130(63.7)	147(75.0)	47(83.9)	34(85.0)
Novant Main	66(32.3)	44(22.4)	9(16.1)	6(15.0)
Novant Huntersville	2(1.0)	1(0.5)	0(0)	0(0)
Novant Matthews	6(2.9)	4(2.0)	0(0)	0(0)
Total Novant Destinations	74(36.3)	49(25.0)	9(16.1)	6(15.0)
Total Number of Destinations	204	196	56	40

Bill Amounts. Among the tenants that participated in the Medic portion of the study (n=47), the total billed amount for Medic utilization was $258,604 less in the two years following their move into Moore Place than it was the two years prior, a 75% decrease.

Table 43: Total MEDIC Bill Amount, 2 Years Pre/Post (n=47)

Measure	2 Years Pre	2 Years Post	% Change
Total Bill Amount	$346,186	$87,582	-75

In the 2 years prior to their move to Moore Place, the tenants' annual billed amounts ranged from $0 up to $131,332. In the 2 years following their move to Moore Place, their annual billed amounts ranged from $0 up to $22,272. Paired sample *t* tests showed that the average annual billed amount dropped from $3,664 (SD=9814) for the two years prior to

entering Moore Place to $1,079 (SD=2762) for the two years following the move into Moore Place, a statistically significant decrease, t=2.347 (46) p<.05.

Table 44: Average MEDIC Bill Amounts, 2 Years Pre/Post (n=47)

Measure	2 Years Pre	2 Years Post	t	*df*	*p*
	M (SD)				
Average Bill Amount	$7,366 (19972)	$1,863 (3974)	2.228	46	.031*

Note. M = mean; SD = standard deviation
*p<.05.

Differences in the average Medic bill amount was also compared across three time periods: One year before tenants moved into Moore Place, one year after tenants moved in, and two years after tenants moved in. Repeated measures ANOVA results show statistically significant changes over time, F (1.0, 47.1)=4.78, p=.033. Average Medic bills decreased from $3,665 (SD=9,814) during the year before tenants moved into Moore Place to $1,079 (SD=2,762) the year after they moved into Moore Place. The decrease was statistically significant, t=2.35(46) p=.023. Calls decreased further between the first year and the second year after tenants moved into Moore Place from $1,079 (SD=2,762) to $784 (SD=1,559), although the changes between the first and second year of tenancy were not statistically significant, t=0.97(46) p=.337. Table 45 summarizes the changes in average Medic bill amounts over three time periods.

Table 45: Average Medic Bill Amount across Time (n=47)

Measure	Baseline	Year 1	Year 2	*F*	*df*	*p*
	M (SD)					
Medic Bill Amount	$3,665 (9,814)	$1,079 (2,762)	$784 (1,559)	4.78	1.0, 47.1	.033*

Note. M = mean; SD = standard deviation
*p<.05

Payment Sources. Payment sources for Medic utilization were also examined. During the two years prior to tenant moves into Moore Place, there were 90 payments from three sources to Medic. Prior to Moore Place, Medicaid paid half of bills and approximately half had no payment source. In the two years following participating tenant moves into Moore Place,

Medicaid was the major payment source (73, 76.8%) and there were only 12 bills (12.6%) without a payment source. See Table 46 below.

Table 46: Payment Sources for Medic Utilization (n=47)

Measure	2 Years Prior	1 Year Prior	1 Year Post	2 Years Post
	n (% of payments)			
No Payment Source	114(55.9)	70(35.9)	10(17.9)	2(5.1)
Medicaid	82(40.2)	108(55.4)	42(75.0)	31(79.5)
Discount-Charity	0(0)	3(1.5)	3(5.4)	1(2.6)
Medicare	4(2.0)	14(7.2)	1(1.8)	5(12.8)
Victim's Assistance	4(2.0)	0(0)	0(0)	0(0)
Total Number of Payments	204	195	56	39

Part 4: Jail Utilization Study

The jail utilization portion of the Evaluation Project was conducted using publicly available data from the Mecklenburg County Sheriff's Department on arrests and incarcerations in the Mecklenburg County Jail. Jail utilization was examined for the two years prior and the two years following a participating tenants move to Moore Place.

Response Rate. The original sample for the hospital utilization study was used as a starting point for the jail utilization study. The response rate for the jail portion of the study is described in Table 47.

Table 47: Response Rates for Hospital and Jail Utilization Study

(N=85)	Baseline	Year 1	Year 2
	n (%)		
Participated in Study	74 (87.1)	62 (72.9)	52 (61.2)*
Participants Left Program/Deceased	0 (0.0)	12 (14.1)	24 (32.4)

*Because Mecklenburg County jail data are publically available, Urban Ministry Center continued to follow two tenants who chose not to release their hospital-related information, thus creating a different sample size.

Characteristics of Study Participants. Demographic information gathered at baseline suggests similarities to other parts of the Evaluation Project. The majority of participating tenants were between the ages of 50 and 64 (35, 70%) and most identified as African-American or Black (33, 66%). Table 48 details the demographic characteristics of tenants in the jail utilization study.

Table 48: Characteristics of Study Participants in Jail Utilization Study

	Baseline (n=74)	Year 1 (n=64)	Year 2 (n=52)
	n (%)		
Gender			
Female	21(28.4)	19 (29.7)	15(30.0)
Male	53(71.6)	45 (70.3)	35(70.0)
Race			
American-Indian	1(1.4)	1(1.6)	0(0)
Black or African-American	46(62.2)	41(64.1)	33(66.0)
White	27(36.5)	22(34.4)	17(34.0)
Ethnicity			
Non-Hispanic/Non-Latino	73(1.4)	63(98.4)	49(98.0)
Hispanic/Latino	1(98.6)	1(1.6)	1(2.0)

	Baseline (n=74)	Year 1 (n=64)	Year 2 (n=52)
Age at Move-In			
19-39	4 (5.4)	4(6.3)	1(2.0)
40-49	18 (24.3)	16(25.0)	12(24.0)
50-64	50 (67.6)	43(67.2)	35(70.0)
65+	2(2.7)	1(1.6)	2(4.0)
Veteran	10 (13.5)	9 (14.1)	7 (14.0)

The profile of disabling conditions for tenants in the jail utilization portion of the study is also similar to those in other portions of the Evaluation Project. Table 49 describes the disabling conditions of tenants in the jail utilization study prior to moving into Moore Place.

Table 49: Disabling Conditions in Jail Utilization Study

Condition/Need	Baseline (n=74)	Year 1 (n=64)	Year 2 (n=52)
	n (%)		
Disabling Health Conditions			
Physical Disability	20 (27.0)	18 (28.1)	14 (28.0)
HIV/AIDS	9 (12.2)	9 (14.1)	6 (12.0)
Other Chronic Health Conditions	45(60.8)	41 (64.1)	32 (64.0)
Mental Health	47 (63.5)	40 (62.5)	32 (64.0)
Substance Abuse	45 (60.8)	37 (57.8)	28 (56.0)
Number of Disabling Health Conditions			
No Disabling Health Conditions	1 (1.4)	1 (1.6)	0(0)
1 Disabling Health Condition	22 (29.7)	18 (28.1)	14 (28.0)
2 Disabling Health Conditions	21 (28.4)	19 (29.7)	16 (32.0)
3 Disabling Health Conditions	19 (25.7)	16 (25.0)	14 (28.0)
4 or more Disabling Health Conditions	11 (14.9)	10 (15.7)	6 (12.0)
Other Special Needs			
Developmental Disability	3 (4.1)	3 (4.7)	1 (2.0)

Jail Utilization. The majority of Moore Place tenants were *not* arrested or jailed in the two years preceding (n=31, 60%) or two years following their move to Moore Place (n=42, 81%). In the two years prior to their move to Moore Place, 21 tenants were arrested 102 times. Most tenants who were arrested were arrested once (n=9,17.%) or two-three times (n=7, 14%). One tenant was arrested 25 times and one tenant was arrested 29 times. In the

two years following their move, ten tenants were arrested 18 times, an 82% reduction. Of the tenants who were arrested, only one tenant was arrested more than three times.

Two years prior to their move, tenants spent a total of 1180 days in jail. After their move, tenants spent 130 days in jail, an 89% reduction. Prior to the their move to Moore Place, 13 tenants (25%) who were arrested spent more than 21 days in jail. After their move to Moore Place, only one tenant spent Moore than 21 days in jail. Changes in total jail utilization are depicted in Table 50.

Table 50: Total Participant Jail Utilization, 2 Years Pre/Post (n=52)

Measure	2 Years Pre-Moore Place	2 Years Post-Moore Place	% Change
Total Number of Tenants Arrested	21	10	-52
Total Number of Arrests	102	18	-82
Total Number of Days Incarcerated	1180	130	-89

In their last two years of homelessness, tenants were arrested an average of two times (SD=5.42) but only .35 times (SD=0.88) in the year following their move, a statistically significant difference, t=2.192 (51) p<.05. In addition, in the two years prior to their move, participating tenants spent an average of 22.7 days (SD=52.38) in jail. Following their move, they spent an average of 2.5 (SD=7.56) days in jail, also a statistically significant difference, t=2.817 (51) p<.01. Table 51 describes these reductions.

Table 51: Average Participant Jail Utilization, 2 Years Pre/Post (n=52)

Measure	2 Years Pre	2 Years Post	t	*df*	*p*
Average Number of Arrests	2.0 (5.42)	.35 (0.88)	2.192	51	.033*
Average Number of Days Incarcerated	22.7 (52.38)	2.5 (7.56)	2.817	51	.007**

Note. M = mean; SD = standard deviation
*p<.05. **p<.01.

Reason for Incarceration. As a part of the jail utilization portion of the study, reasons for incarceration were also examined. During the two years prior to tenant moves into Moore Place, tenants were incarcerated 138 times for 34 different charges, falling into four major categories: 1) Local ordinances and citations, 2) Crimes against persons, 3) Crimes against property, and 4) Drug offenses. The majority of these charges were for violating local

ordinances (91, 70%). These violations included trespassing, public panhandling, and alcohol-related offenses. In the two years following participating tenant moves into Moore Place, there were 23 charges associated with incarcerations. The largest percentage of these charges was due to violations of local ordinances (9, 39%). It is important to note that not all charges resulted in convictions.

Table 52: Charges Associated with Incarceration, 2 Years Pre/Post (n=52)

Charge	2 Years Pre	2 Years Post
	n (% of charges)	
Local Ordinances/Citations	**91 (65.9)**	**9 (39.1)**
Trespassing	28 (20.3)	2 (8.7)
Alcohol-Related	37 (26.8)	6 (26.1)
Panhandling	11 (8.0)	0 (0)
Public Urination	2 (1.4)	0 (0)
Profane Usage	1 (0.7)	0 (0)
Probation Violation	1 (0.7)	0 (0)
Disorderly Conduct	5 (3.6)	1 (4.3)
Unauthorized Use of a Motor Vehicle	2 (1.4)	0 (0)
Other	4 (2.9)	0 (0)
Personal	**21 (15.2)**	**5 (21.7)**
Assault	3 (2.2)	0 (0)
Resisting Arrest	2 (1.4)	1 (4.3)
Assault on a Public Official	1 (0.7)	0 (0)
Fugitive Extradition	1 (0.7)	0 (0)
Stalking	1 (0.7)	0 (0)
Communicating Threats	5 (1.4)	1 (4.3)
Assault with a Deadly Weapon	1 (0.7)	0 (0)
Defrauding Taxi Driver	0 (0)	2 (8.7)
Possession of a Firearm by a Felon	0 (0)	1 (4.3)
Unlawful Concealment	6 (4.3)	0 (0)
Property	**19 (13.8)**	**6 (26.1)**
Breaking & Entering – Felony	1 (0.7)	0 (0)
Breaking & Entering – Misdemeanor	0 (0)	0 (0)
Larceny	12 (8.7)	3 (13.0)
Prostitution	4 (0)	0 (0)
Uttering a Forged Instrument	1 (0.7)	0 (0)
Damage to Real Property	1 (0.7)	0 (0)
Injury to Personal Property	0 (0)	2 (8.7)
Possession of Stolen Goods	0 (0)	0 (0))
Drug Offenses	**7 (5.1)**	**2 (8.7)**
Drug Possession	3 (2.2)	0 (0)
Drug Paraphernalia	3 (2.2)	0 (0)

Charge	2 Years Pre	2 Years Post
Possession with intent to Sell – School	0 (0)	1 (0)
Schedule 2 – Deliver Cocaine	0 (0)	1 (4.3)
See Paperwork	0 (0)	1 (4.3)
Total Number of Charges	138	23

Discussion

The Moore Place Permanent Supportive Housing Evaluation Project describes a program that effectively ends homelessness for a large majority of tenants. The program helps them maintain housing stability over time while beginning to address extensive needs related to disabling conditions and long histories of homelessness. The study also documents notable improvements in the utilization of community services including the reduction of ER-related utilization, the increase in more appropriate outpatient utilization, the reduction in Medic utilization, and the reduction in jail utilization.

Tenant Characteristics

Findings regarding tenant characteristics suggest Moore Place tenants who participated in the study are either similar to that of comparable programs or in some cases, more vulnerable than those in comparable programs. Regarding gender and race, Moore Place tenants were similar to those in other PSH programs - men are overrepresented in chronic homelessness and African-Americans are overrepresented in every category of homelessness (Burt, 2001; U.S. HUD, 2013).

Participating tenants were particularly vulnerable regarding age, disabling conditions, and the impact of traumatic stress. The average age of study participants was over the age of 50 and most participating tenants were ages 50 – 64, exceeding the national estimation of 40% of individuals over 50 living in permanent supportive housing (US HUD, 2013). Studies have noted the overall aging of the homeless population (Culhane, Metraux, Bainbridge, & Bryan, 2012; Hahn et al., 2006) and the disproportionate number of single homeless adults born between 1946 and 1964 in the latter half of the Baby Boom (Culhane, Metraux, Byrne, Steno, & Bainbridge, 2013). In one study, when compared to the housed individuals their same age, homeless adults age 50 and over had higher rates of geriatric syndromes including depression, cognitive impairment, mobility limitations, and difficulty performing Activities of Daily Living (Brown, Kiely, Bharel, & Mitchell, 2012). Research suggests that homeless adults age from 15 to 20 years faster than the general population (e.g., Cohen, 1999; O'Connell, Roncarti, Reilly et al., 2004).

These patterns for aging homeless adults have important implications for Moore Place and for the community. Moore Place is serving a number of individuals who will likely age in place. With on-site clinical support and regular access to primary care, tenants can manage chronic diseases improving their quality of life and delaying costly long-term care. The

average annual cost of nursing home care (semi-private room) is $75,555 in Charlotte (U.S. Department of Health and Human Services [HHS], 2010). In addition, as in the general population, health care costs for tenants will rise in older adulthood. However, compared to the emergency-related healthcare they would have likely sought living on the streets or in shelter, the costs for services accessed through primary care may be more congruent with those of the general aging population.

The Evaluation Project further suggests a population with extensive needs related to disabling conditions. Disabling conditions were documented by referring case workers, corroborated by Moore Place licensed clinicians prior to entry, and updated on a quarterly basis by clinicians. While eligibility criteria for the program require a disabling condition, the majority of tenants who participated in the study at Year had two or more health conditions (including mental health and substance abuse disorders). Urban Ministry Center used a vulnerability index to identify potential tenants for outreach for tenancy at Moore Place. The Evaluation Project suggests that Moore Place has met its objective to serve some of the most vulnerable chronically homeless individuals in the Charlotte community.

Housing Stability

More than 80% of Moore Place tenants who participated in Part 1 of the study remained stably housed after two years of residency, despite extensive histories of homelessness and multiple health-related disabling conditions. This housing stability rate is consistent with other housing first permanent supportive housing models across the country (e.g. Pearson, Montgomery, & Locke, 2009; Stephancic & Tsemberis, 2007). As studies with comparison groups have demonstrated, people in more typical *treatment first* housing (programs that require treatment success and compliance to enter or retain housing) have lower housing retention rates (e.g., Tsemberis & Eisenberg, 2000).

In addition to the housing stability rate, the overall income of participating tenants increased at every data collection point since program entry. The increases were statistically significant. At intake, 55% of tenants participating in the study had earned or benefit income. At Year 2, 82% of tenants had earned or benefit income. Only one tenant was employed, but a low employment rate is expected since tenants are required to have a disabling condition to live at Moore Place. Of those with income, 58% received Supplemental Security Income (SSI). Despite high disability rates among the homeless, only 10-15% of homeless people nationally receive SSI or SSDI (Social Security Disability Income) (US HUD, 2011). The comparably higher

percentage of individuals that had SSI income at the time of move-in to Moore Place may speak to the success of the SSI/SSDI Outreach, Access, and Recovery program for the homeless (SOAR). Urban Ministry Center employs a dedicated SOAR specialist, and several members of the Moore Place clinical staff utilize the SOAR process to assist tenants in receiving disability income. Tenants of Moore Place are expected to pay 30% of their income for rent and while 30% of SSI payments (approximately $209) does not cover Moore Place's housing costs, it is a source of revenue for the program and enables tenants to meaningfully participate in paying for their housing. Regular income allows tenants to contribute to the cost of their housing and to resume or develop financial management behaviors necessary to maintain housing.

Research to date suggests that Moore Place effectively ends long-term homelessness among its tenants and as discussed below, serves as a foundation from which to address individual health, mental health, and social concerns. In addition, stable housing has also been linked to changes in health utilization patterns and help-seeking behaviors, both of which have cost implications for the community.

Clinical Stability

Analysis of clinical measures from baseline through two years of tenancy at Moore Place suggested no statistically significant improvements in clinical stability. Qualitative data, however, suggested perceived positive changes in health and mental health in response to the questions, "What has changed most since moving into Moore Place?" As noted in the study limitations section, baseline measures were not taken until *after* a person was housed, within the first 30 days of tenancy. Since most of the clinical measures are based on perceptions of health and mental health, tenants may have perceived improvements before given the opportunity to take baseline measures. An earlier baseline measure prior to move-in was not feasible, but would have likely captured a more accurate representation of a tenant's clinical stability prior to living at Moore Place.

Nevertheless, given the extent of comorbid health disorders and the added risk of extensive histories of homelessness, the continued vulnerability demonstrated by the clinical measures is not surprising. The high disease and mortality rates of homeless individuals are well-documented (e.g., Baggett, O'Connell, Singer, & Rigotti, 2010). Tenants' perceptions of their own health appear congruent with presence of multiple health disorders. Perceived health and mental health summary scores on the SF36v2 suggest that Moore Place residents

have worse perceptions about their health than do those in the general population. Despite numerous health conditions and poorly perceived health, all average clinical scores stayed the same or improved since the baseline data collection phase, although none of the changes were statistically significant.

The impact of trauma continues to be relevant. The average score of the Post-Traumatic Stress Disorder (PTSD) screening measure, the PCL-C at Year 2 (M=37.5; SD=19.5) suggests the relevance of post-traumatic stress for the Moore Place tenants in general. The average score exceeds the cut-off score of 30 for the general population and 36 for the Veteran Administration Health primary care population. Cut-off scores tell clinicians that a patient should be further examined for PTSD. In addition, at Year 2, 36% (n=14) of 39 study participants met clinical criteria for PTSD. These scores and the histories of domestic violence noted at intake suggest a substantial portion of Moore Place tenants are exposed to and experiencing the effects of trauma.

Trauma is defined as events that cause intense feelings of fear, anxiety, helplessness, or horror—such as combat, adult or childhood physical abuse, sexual abuse or assault, or domestic violence (e.g., Finkelhor, Ormrod, & Turner, 2007) – and is recognized as a common experience among those experiencing homelessness both prior to and during homelessness. Once homeless, rates of violent and nonviolent victimization are higher for homeless adults than for the general population (e.g., Burt, 2001; Fitzpatrick, La Gory, & Richey, 1993: Kushel, Evans, Perry, Robertson, & Moss, 2003). Nationally representative data suggest that 54% of homeless adults have been victimized while homeless (Lee & Schreck, 2005). Homelessness itself has been recognized as a "psychological trauma" that predicts poor health and mental health outcomes (Goodman, Saxe, & Harvey, 1991). The negative mental health effects of trauma are well documented and include increased risk of depression, suicide, PTSD, and substance abuse (e.g., Afifi, Boman, Fleisher, & Sareen, 2009; Chapman et al., 2004; Kubiak, 2005; Kubiak & Cortina, 2003). In addition, when compared to the general population, survivors of trauma are more likely to engage in high-risk health behaviors such as substance abuse and risky sexual behavior and they are more likely to experience chronic health conditions including diabetes, heart disease, stroke, and chronic pain (e.g., Davis, Luecken, & Zautra; Felitti et al., 1998; Hillis, Anda, Felitti, Nordenberg, & Marchbanks, 2000; Sachs-Ericsson et al., 2009; Simpson & Miller, 2002; Springer et al., 2007). Despite the prevalence of trauma in the homeless population and its numerous negative outcomes that are costly on individual and community levels, trauma is rarely explicitly addressed in

homeless service models (Hopper, Bassuk, & Olivet, 2010). Housing First permanent supportive housing models are able to offer services that are sensitive to tenants who may have experienced trauma by providing a safe, stable environment that is not contingent on service success and compliance. Such stability and choice allows trauma survivors the opportunity to build back a sense of control, important in the trauma recovery process. Moore Place clinical staff assess for a history of trauma at program entry and offer psychiatric and counseling services to tenants.

Reports of substance use in the 30 days prior to the third phase of data collection suggest that a portion of tenants continue to utilize alcohol and/or illegal substances although the number of tenants using alcohol and drugs decreased from baseline to Year 2. The majority of tenants (74%) reported no drug use and 42% reported no alcohol use. The average number of days that tenants used alcohol decreased slightly from baseline to Year 2, but the decrease was not statistically significant. The average number of days that tenants used drugs did not change. While the measures used in this study do not assess addiction and abuse and are limited as self-report measures, Moore Place clinicians have noted substance abuse and a history of substance abuse as a special need experienced by over half (57%) of the tenants participating in the study at Year 2.

Substance abuse is associated with numerous negative outcomes that impact individuals and their communities including physical and mental health, employment, social networks and involvement with the health and criminal justice systems. These outcomes may be exacerbated when individuals are not housed (e.g., McNeil, Binder, & Robinson, 2005). Substance use and abuse behaviors will vary for tenants in Housing First permanent supportive housing programs. Supports are continually provided for tenants to reduce and abstain from substance use, however, tenants ultimately will choose to maintain, moderate, or abstain from substance use. The key role of client choice in creating change is recognized by Moore Place staff and is well documented in the success of housing first permanent supportive housing programs (e.g., Padgett et al., 2006; Larimer et al., 2009).

Prior to the housing first model, strict eligibility criteria on sobriety (or a commitment to sobriety) in most transitional and permanent housing programs prevented housing many individuals and families experiencing chronic homelessness. If those experiencing chronic homelessness managed sobriety long enough to enter a transitional or permanent housing program, relapses – a typical part of the recovery process – would often result in removal from the program sending vulnerable individuals back to the streets and emergency shelter

where resources to address their addiction were limited, their health further deteriorated, and the community costs to serve them in hospitals and jails increased. While some Moore Place tenants continue to use substances and struggle with addiction, a majority of study participants remain stably housed and typical impacts on the community have been meaningfully addressed by the program – emergency room visits and arrests have decreased.

Evidence suggests that substance abuse has a relapse rate of between 40-60%, similar to that of other chronic diseases such as hypertension (50-70%), diabetes (30-50%), and asthma (50-70%) (McLellan, Lewis, O'Brien, & Kleber, 2000). Moore Place clinical staff address substance abuse and relapse as they do any other chronic disease, as an opportunity to work with the tenant to intervene in the disease process. Studies of other permanent supportive housing programs suggest that the majority of tenants will moderate or reduce utilization as they remain housed (Padgett, Gulcur, & Tsemberis, 2006; Tsemberis, Gulcur, & Nakae, 2005).

Social Stability

The social stability of Moore Place tenants at Year 2 remains roughly the same as it did at baseline data collection. As noted in the first interim report, the social networks of chronically homeless individuals may be severely weakened or destroyed before and during homelessness. Those who are chronically homeless, and particularly those with mental illnesses, perceive less social support than the housed and more recently homeless (e.g., Lam & Rosenheck, 1999). The standardized measures used to gauge the social support Moore Place tenants perceive from their friends and family suggest that tenants continue to perceive little support from family and friend networks. Qualitative data suggests, however, that tenants are reconnecting with family members and engaging socially in their community at Moore Place. Among homeless and formerly homeless individuals, higher rates of perceived social support are linked to a reduced likelihood of victimization (Hwang et al., 2009; Lam & Rosenheck, 1998), better quality of life (Lam & Rosenheck, 2000), and better health and mental health outcomes (Cohen, 2004; Hwang et al., 2009; Kawachi & Berkman, 2001). As the social stability of Moore Place tenants improve, improvement in their health and mental health may follow.

Service Utilization

Moore Place has resulted in the reduced utilization of emergency health services, impacting both tenants and several community systems. In the two years prior to housing at

Moore Place, participating tenants amassed bills at Carolinas HealthCare System and Novant Health totaling more than $3.5 million, visited the emergency room 804 times, and were hospitalized 470 days. When comparing the two years prior to the move to Moore Place to the two years following the move, the total amount billed participating tenants was reduced by 68%, the total number of visits to the emergency room was reduced by 81%, and the total number of days hospitalized was reduced by 62%. The average annual bill per tenant fell from $71,040 to $22,530 ($p<.01$); the average number of emergency room visits fell from 16.1to 3.1 visits ($p\leq.05$); and the average length of hospitalization originating from the ER fell from 9.4 days to 3.6 days ($p<.05$).

Actual hospital costs are typically less than the charges reflected in hospital billing data. Further, hospital billing data do not include additional bills from physicians who invoice for professional services separately. Nevertheless, the reduction in ER visits and the length of resulting hospitalizations suggest meaningful reductions in associated costs. Hospital bills may not be a complete nor completely accurate source of data to examine hospital costs, but they do provide a reliable source of information to examine health behavior, for which there are important cost implications.

The remuneration a hospital receives for services depends largely on the payment source, not on the actual cost of providing care. Payments for services are dictated by predetermined fee schedules (Medicaid and Medicare), negotiated rates with private insurers, and hospital policies related to charity care and serving the uninsured. Regardless of the actual cost of services, hospital systems generally assume the cost of indigent care when those seeking emergency services are not insured by Medicaid, Medicare, or a private insurer. In the two years before participating tenants moved into Moore Place, 41% of all payments made to Carolinas HealthCare Systems were made by Medicaid or Medicare and 47% were attributed to Charity Care, uninsured discounts, and sliding scale adjustments. In the two years after moving to Moore Place, however, 87% of the payments made for tenant emergency-related hospital services were made by Medicare or Medicaid. After Moore Place, CHS not only saw a reduction in utilization, but also a reduction in services for which they must assume costs. The percentage of payment sources did not change substantially for Novant Health, although use of emergency-related hospital services dropped substantially from 249 to 26 visits after tenants moved into Moore Place.

In addition to reductions in emergency-related hospital utilization, Moore Place tenant use of Mecklenburg County Medic services also decreased. Ambulance calls and transports

through Medic (also known as Mecklenburg EMS Agency) also decreased in the two years after tenants were housed at Moore Place. Emergency medical personnel responded to 312 fewer calls (a 76% reduction) and made 304 fewer transports (a 76% reduction) in the two years after tenants moved into Moore Place than they did in the two years before. The average number of calls made by study participants fell from 9 (SD=23) to 2 (SD=4) and transports fell from 8 (SD=23) to 2 (SD=4). Both changes were statistically significant ($p<.05$). The average bill for tenant Medic utilization also decreased ($p<.05$).

Medic relies on a variety of payment source to pay for essential emergency services. Mecklenburg County absorbs the cost of those who require emergency transport but have no payment source. Prior to Moore Place, Medicaid paid half of bills and approximately half had no payment source. In the two years following participating tenant moves into Moore Place, Medicaid was the major payment source (73, 76.8%) and there were only 12 bills (12.6%) without a payment source. Like the hospitals, Medic saw both a reduction in utilization as well as a reduction in services for which they must assume costs.

Important to the health and well-being of Moore Place tenants, outpatient utilization of CHS increased substantially. After moving into Moore Place, tenants began to address their health challenges through primary care, planned procedures, and appointments with psychiatrists or other mental health providers. In the two years following their move into Moore Place, participants used CHS outpatient services 207 more times (a 53% increase) than they did in the two years prior to Moore Place. Average utilization of outpatient services rose from 7.8 (SD=11.9) visits per person to 11.9 (SD=8.4) visits per person, a statistically significant increase ($p<.01$). The average cost of outpatient services rose from $8,643 (SD=15,990) to $22,127 (SD=29,040), also a statistically significant increase ($p<.01$). Despite the increase in outpatient utilization, overall utilization of CHS decreased the two years after tenants moved into Moore Place compared to the two years before. The changes were approaching statistical significance suggesting a trend in the overall reduction of CHS utilization, $t=1.61(49)$ $p=.113$.

Examining the data across three time periods further explores this promising pattern. Average CHS outpatient utilization rises from 4.4 (SD=7.0) visits the year before tenants moved to Moore Place to 6.9 (SD=6.70) the year after Moore Place, but decreases to 5.0 (SD=4.17) visits two years after tenants moved into Moore Place. The change between the first and second years of tenancy was approaching statistical significance suggesting a possible trend in the reduction of outpatient utilization, $t=1.80$ (50) $p=.078$. Upon entry into

Moore Place, the interdisciplinary services team works with tenants to establish a medical home and begin to address the effects of poor health that accumulated while homeless. This assertive effort to address tenant health and mental health conditions leads to increased utilization of outpatient services such as primary care appointments, planned surgeries, and appointments with mental health professionals. However, this research suggests that utilization of outpatient services may decrease after an initial period of connecting tenants to necessary health services. While additional measurements across time would be necessary to confirm a linear trend, the findings are promising. This study suggests that Moore Place leads to more efficient health utilization and connects tenants to medical resources that can enable them to more effectively manage their complex health and mental health conditions.

Reductions in service utilization extend to the criminal justice system, specifically arrests by the Charlotte-Mecklenburg Police Department and incarcerations at the Mecklenburg County jail. Most tenants were not involved with the criminal justice system either before or after their move to Moore Place. However, of the tenants arrested or jailed in the two years preceding (n=21) or following (n=10) their move to Moore Place, there were 90 fewer arrests (82% reduction) and 1,050 fewer nights in jail (89% reduction). The decrease in the average number of arrests and jail stays was statistically significant ($p=<.05$ and $p=<.01$, respectively).

The frequent use of various community resources prior to moving into Moore Place underscores the inefficiency of relying on crisis services alone to address chronic homelessness. Chronically homeless adults, and particularly those who participated in the study at Moore Place, experience numerous health and mental health disorders that are exacerbated on the street and in emergency shelter and lead to inappropriate utilization of community institutions in order to address multifaceted housing and health needs. While it was outside the scope and feasibility of this research project to conduct a comprehensive analysis to determine the overall cost-effectiveness of Moore Place across multiple systems (e.g., homeless services, social services, mental health services), the reductions in utilization documented by this research confirm the findings of earlier research documenting the positive impact housing first permanent supportive housing programs have on the inappropriate utilization of expensive service systems (Culhane et al., 2008; Rosenheck et al., 2003).

The Moore Place Permanent Supportive Housing Evaluation Project suggests that Moore Place has succeeded in maintaining a high housing stability rate with a clinically and socially

vulnerable population. In addition, the program has helped transform its tenants' use of community resources, reducing arrests, jail stays, and the utilization of emergency services. Despite the myriad of health challenges the tenants of Moore Place face, the use of emergency departments and ambulance services has shifted notably toward more appropriate – and less expensive – use of primary health care. The persistence of negative health and mental health perceptions among tenants further suggests the importance of ***permanent*** and ***supportive*** in programs like Moore Place. As tenants marshal their strengths to cope with the cumulative physical and mental impact of life histories of poverty and homelessness, significant improvements in underlying conditions may take longer to realize. The reality that their housing remains and that the services they need are readily available offers both tenants and the community assurance that there is time, space, and support to effectively address the challenges and lingering effects of chronic homelessness.

Recommendations

While Moore Place has demonstrated early success, findings from the Evaluation Project can be used to emphasize and underscore important aspects of programming and to suggest potential improvements. The following suggestions are drawn from study findings in the context of a growing evidence base on housing first permanent supportive housing models:

- Study findings underscore the importance of *continued attention on the mental health needs of tenants*, with particular attention to trauma-informed and trauma-specific services and available services for substance use and abuse. Incorporation of peer clinicians who are in recovery from mental health and/or substance abuse disorders can provide an additional form of support for tenants. Peer support has been effective in reducing the use of alcohol and improving the quality of life of chronically homeless individuals (e.g., Bean, Shaffer, & Glennon, 2013).
- Study findings also underscore the importance of *continued attention on the physical health needs of tenants*, with particular attention to the perceived health of tenants. Health promotion programming, such as the Stanford Chronic Disease Self-Management Program, has been successfully implemented in conjunction with Permanent Supportive Housing (e.g., Henwood, Cabassa, Craig, & Padgett, 2013). Providing additional opportunities for tenants to begin to take control of poor health and chronic disease may lead to better perceptions of health and better health outcomes.

- Study findings suggest that Moore Place should *prepare to be a residence where tenants will age-in-place*. Moore Place was built to anticipate the physical disabilities of its tenants and the physical facilities are prepared for an aging population. Partnerships with service providers in Charlotte-Mecklenburg's network of aging services can help the Moore Place clinical services team address additional aspects of aging including emotional, social, and health needs associated with aging as well as assistance with transportation, nutrition, and regular daily activities.
- Qualitative findings provide opportunities to *incorporate tenant suggestions for improvement*. Tenant responses at 6 months, Year 1, and Year 2 to the question, "What improvements do you think Moore Place could make to better serve its residents?" are provided in Appendix D. Responses include a list of activities and other programming ideas to improve services. However, responses also suggest that some tenants do not understand key components of the housing first model, particularly harm reduction instead of abstinence. While the clinical staff informs tenants about the housing first model, qualitative findings suggest considering additional opportunities to *further educate tenants about the housing first model*.
- Urban Ministry Center should conduct *further research to identify and understand the factors that lead a small group of Moore Place tenants to continue to use emergency health services*, including emergency departments and Medic. Research could examine health related utilization patterns in greater depth, including medical histories as well as current diagnoses and treatment. In addition, qualitative interviews with tenants who continue to frequently use emergency services would also provide insight on factors contributing to frequent utilization.
- Urban Ministry Center should conduct *further research on the factors leading to unsuccessful housing exits*. While Moore Place has maintained a high housing stability rate over its first two years, nearly 20% of its first tenants had unsuccessful housing exits despite an organizational commitment to housing retention and assertive outreach to preserve housing. Identifying the factors that lead to unsuccessful exits as well as programs and practices that have successfully addressed those factors may lead to greater housing retention among Moore Place tenants.

APPENDIX A: REVIEW OF LITERATURE

In the last ten years, *housing first* has become a frequently used term in the homeless services sector as high profile advocacy and planning efforts have focused on the key role permanent housing plays in solving homelessness. Early usage of the term referred to specific models including Beyond Shelter, a housing-focused program for homeless families in Los Angeles; Direct Access to Housing, a congregate-site program for chronically homeless individuals in San Francisco; and Pathways to Housing, a scattered-site program for chronically homeless individuals in New York City. These initial models were appreciably different but each focused on the early, if not immediate, provision of permanent housing for those experiencing homelessness. Later usage of the term housing first has become more diffuse, as agencies, institutions, and communities around the country apply the term differentially.

Housing first as a program model for chronically homeless individuals is a form of permanent supportive housing. As defined by the U.S. Department of Housing and Urban Development's (HUD) Supportive Housing Program (SHP), permanent supportive housing is permanent, community-based housing that provides supportive services for homeless individuals with disabling conditions and "enables special needs populations to live as independently as possible in a permanent setting" (U.S. Housing and Urban Development [US HUD], n.d.). Supportive housing models have been widely studied, particularly with individuals with psychiatric disabilities and findings demonstrate positive outcomes in housing stability but varied clinical outcomes (e.g., Rogers, Kash-MacDonald, & Olshewski, 2009). While eligibility criteria for permanent supportive housing programs vary, housing first models are low barrier programs. Housing first programs typically have low threshold admissions policies with minimal eligibility criteria; use a harm reduction approach to substance use; focus on eviction prevention; and have reduced service requirements that do not require service compliance or success (i.e., sobriety) in order for a tenant to qualify for or maintain housing (Pearson, Locke, & McDonald, 2007; Watson, Wagner, & Rivers, 2013).

There is a robust body of literature that examines the impact of the housing first model on housing, clinical, and criminal justice outcomes. However, much of the research on housing first programs for chronically homeless individuals are based largely on two programs, the Pathways to Housing Model (Pathways), a scattered site housing model in New York City that has substantial empirical support (e.g., Padgett, Gulcur, & Tsemberis, 2006; Tsemberis &

Eisenberg, 2000; Tsemberis, Gulcur, & Nakae, 2005) and Downtown Emergency Shelter's 1811 Eastlake residence, a congregate housing model in Seattle, Washington. Starting in 2013, the Veterans Administration (VA) and the Department of Housing and Urban Development (HUD) adopted housing first as the official policy for the HUD-VASH program, a program that provides a rental assistance voucher and VA based case management and healthcare services for homeless veterans (US HUD, 2013). A significant amount of emerging research has focused on the impact of housing first on HUD-VASH recipients.

The Pathways to Housing model integrates permanent, scattered site housing and Assertive Community Treatment for individuals experiencing chronic homelessness and serious mental illness. The model further assumes that recovery from serious and persistent mental illness is possible. Evidence has documented the effectiveness of a Pathway's housing first model as compared to the less effective *treatment first* or linear housing models in which services are provided to achieve "housing readiness" prior to a permanent housing placement. Among other findings, the research suggests that the Pathway's housing first model permanently houses chronically homeless individuals with a serious mental illness at a higher and faster rate than treatment first models (Stefancic & Tsemberis, 2007; Tsemberis, Gulcur, & Nakae, 2005) and once in housing, the Pathway's housing first model has higher housing retention rates than treatment first models (Stefancic & Tsemberis, 2007; Tsembersi, Gulcur, & Nakae, 2005). In one study, Pathways demonstrated an 88% retention rate after five years compared to the 47% retention rate of those in linear housing models (Tsemberis & Eisenberg, 2000). The 1811 Eastlake residence in Seattle is a congregate site housing first model that focuses predominantly on chronically homeless individuals who abuse alcohol. The program reports an 84% housing stability (Pearson, Montgomery, & Locke, 2009). Similar to findings from the Pathways and 1811 Eastlake programs, HUD-VASH recipients of housing first were housed more quickly than those who received treatment as usual (1 month vs. 6 months), and were eight times more likely to maintain housing stability for twelve months (Montgomery, Hill, Kane, & Culhane, 2013).

Beyond housing successes, these housing first models have demonstrated other positive outcomes. The Pathways model has shown to engender higher levels of perceived choice than treatment first models (Greenwood, Schaefer-McDaniel, Winkel, & Tsemberis, 2005; Tsemberis, Gulcur, & Nakae, 2005). Higher levels of perceived choice were associated with decreased psychiatric symptomology (Greenwood et al., 2005), increased social integration into the community (Gulcur et al., 2007), and increased residential stability

(Tsemberis, Gulcur, & Nakae, 2005). Pathways' clients also spent less time in psychiatric hospitalization than did the treatment first group that participated in the study (Gulcur et al., 2003).

All three housing first models have shown seemingly counter intuitive results concerning substance use and abuse. Despite *not* requiring those who enter and remain in their programs to be clean and sober, alcohol use and abuse has *not* interfered with high housing stability rates for residents in these models (Padgett, Gulcur, & Tsemberis, 2006; Collins, Malone, Chfaselfi et al., 2012; Larimer et al., 2009; Tsai, Kasprow, & Rosenheck, 2014). In studies of the Pathways and 1811 Eastlake models, residents' alcohol use either remained the same or decreased. In one study, after four years, there was no significant difference in substance use between Pathways' housing first residents and the treatment first (services as usual) control group suggesting the ability for residents to remain independent and stably housed without increasing substance use (Padgett, Gulcur, & Tsemberis, 2006; Tsemberis, Gulcur, & Nakae, 2005). HUD-VASH recipients with alcohol use disorder, drug use disorder, or both displayed a slow decline in alcohol use, number of nights spent in transitional/ residential treatment, and a slower increase in number of nights that they spent in their own housing (Tsai, Kasprow, & Rosenheck, 2014). Despite these minimal clinical gains, those with substance use issues compared to those without, had no significant differences in housing outcomes indicating that individuals with substance use issues were able to stay stably housed in a housing first program even though they had a substance use disorder (Tsai, Kasprow, & Rosenheck, 2014).

With regard to health and healthcare utilization, findings are similarly counterintuitive. While those in housing first programs and those who are still homeless utilize healthcare services at comparable rates, these groups utilize healthcare services in different ways. Findings from a study that interviewed both staff and residents at a housing first program found that access to healthcare and having housing fundamentally altered residents' views and approach to health and healthcare (Henwood et al., 2013). For example, one study of veterans found that those who were currently homeless were more likely to have psychiatric readmissions and emergency medical services utilization (Garbrielian et al., 2014). In contrast, those with HUD-VASH were more likely to use primary care, specialty, or surgical services indicating different approaches to healthcare between to those who were currently homeless and those who used HUD-VASH (Garbrielian et al., 2014). Despite changing views and approaches to healthcare, individuals still face internal and external barriers to health

even after they are housed which results in a long, often slow progression toward improved health (Henwood et al., 2013).

The 1811 Eastlake program has also demonstrated positive outcomes related to individuals with involvement in the criminal justice system. First, researchers have demonstrated that in a program like 1811 Eastlake, a criminal history does *not* predict a resident's ability to maintain stable housing (Pearson, Montgomery, & Locke, 2009). In fact, once 1811 Eastlake residents entered the program, their jail time decreased (Larimer et al., 2009). Other studies have had analogous findings (Bean, Schafer, & Glennon, 2013; Clifasefi, Malone, & Collins, 2012; Mackelprang, Collins, Seema, & Clifasefi, 2014). A study of individuals with severe alcohol problems living in a housing first project revealed that days incarcerated and number of jail bookings decreased significantly compared to criminal justice involvement before housing first (Clifasefi, Malone, & Collins, 2012). In fact, length of time in the housing first program was a significant predictor of jail bookings with each additional month a person lived in the housing first project, associated with 5% fewer jail bookings than the previous month. (Clifasefi, Malone, & Collins, 2012).

Finally, residents in housing first programs often display significant changes in quality of life from baseline to one year (e.g. Bean, Schafer, & Glennon, 2013; Patterson,et al., 2013; Henwood, Matejkowski, Stefancic, & Lukens, 2014). Patterson et al (2013) reported compared to treatment as usual groups, housing first recipients reported higher overall perceived quality of life with significant improvements in safety and living situation at 12 months post-baseline while Henwood and colleagues (2014) found significant improvements in living situation, family relationships, and financial resources domains. As illustrated, housing first is associated with housing stability, and significant changes in substance use, quality of life, use of primary care physicians, and number of jail and prison visits. In particular, research on Pathways to Housing, 1811 Eastlake, and HUD-VASH recipients suggest that housing first models of permanent supportive housing are efficient AND effective at helping some of the hardest to serve homeless individuals secure and maintain permanent housing (e.g., Larimer et al., 2009; Tsemberis et al., 2003).

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APPENDIX B: MOORE PLACE DESCRIPTION

Moore Place is a single-site, housing first permanent supportive housing (PSH) program that provides non time-limited housing and a comprehensive array of supportive services to formerly chronically homeless individuals. Moore Place is the first permanent supportive housing facility in the Charlotte area to operate as a housing first model. Housing first programs emphasize housing as a first step in service delivery; have low threshold admissions policies with minimal eligibility criteria; use a harm reduction approach to substance use; focus on eviction prevention; and have reduced service requirements that do not require service compliance or success in order for a tenant to qualify for or maintain housing. Moore Place serves individuals who have extensive histories of homelessness and at least one disabling condition (mental health and substance abuse disorders, chronic health disorders, HIV/AIDS, physical disabilities, and developmental disabilities). As with other housing first PSH programs, Moore Place recognizes housing as the foundation necessary to effectively address tenant health and mental health disorders. Tenants sign leases for their efficiency apartments and pay 30% of their income monthly as rent.

Supportive services are provided using a modified Assertive Community Treatment team model. Tenants receive on-site supportive services offered by a team of clinicians in the form of case-management, group and individual counseling, and crisis-intervention. Clinicians are trained in accredited counseling, social work, and substance abuse treatment programs. The tenant to supportive services staff ratio is 15:1. Case management services include assistance with life skills (e.g., money management, budgeting, maintaining a home), linkages to mental health and recovery programs, medication management, linkages to primary health and specialty care as needed, assistance with employment resources and vocational training, and assistance with accessing mainstream benefits, including health insurance. Transportation to important appointments or meetings is provided by the supportive services team when necessary. Social workers at Moore Place are available Monday thru Friday from 8:30 to 4:30 and Saturday from 9 to 1:30 but may adjust their schedules based on the needs of the tenant (i.e., come in early or stay late to escort a tenant to an appointment or to provide access to a recreational or therapeutic event). One clinical team member is always on call during other hours in order to be responsive to client needs and address crises.

Upon move-in to Moore Place, each tenant meets with a member of the clinical staff to collect intake information and to conduct a needs assessment. An individualized service plan is jointly developed that addresses the tenant's stated needs and goals. Supportive services are provided in response to each plan, and the plan is updated by the tenant and a staff member every 90 days. Tenants may choose not to engage in the services offered by staff, but clinical staff do extensive outreach to ensure that they have contact with every tenant at least once a month. Staff use motivational interviewing, assertive outreach, and harm reduction strategies to engage tenants in services. The clinical staff meets tenants "where they are" to help them maintain housing, and provides support for tenants as they progress in their personal recovery process. Additionally, the clinical team at Moore Place holds a daily meeting during which each tenant's status is discussed. This meeting provides an opportunity for the team to discuss the status of all tenants, and run-through the entire building roster. The team reviews tenants' progress towards goals as well as any problematic behaviors that affect housing retention and resident quality of life. These meetings serve as an immediate way to assess tenants' needs and issues and to make real-time interventions as needed.

Individuals who enter the program with existing connections to health care providers and community resources are asked to sign releases of information to allow program staff to assist with coordination of care as necessary. Those clients without existing providers are assisted in obtaining a primary care physician and other health and mental health resources through a partnership with Carolinas HealthCare System. In addition, several therapeutic group and recreational activities are offered at Moore Place, which enhances service provision to tenants. Staff also make referrals to agencies that provide employment assistance, such as Goodwill and Vocational Rehabilitation. Additionally, staff work with tenants individually to develop resumes, apply for jobs, or continue their education. Current tenants are engaged in completing their GED/High School Diploma, seminary classes, and vocational training.

APPENDIX C: RESEARCH METHODOLOGY

The Moore Place Permanent Supportive Housing Evaluation Project (Evaluation Project) consisted of four components:

1. Housing, Clinical, and Social Stability of Tenants
2. Hospital Utilization Patterns of Tenants
3. Medic Utilization Patterns of Tenants
4. Jail Utilization Patterns of Tenants

The study initially focused on Part 1 of the Evaluation Project. The additional components of the study were added at the request of the Urban Ministry Center, which was collecting administrative data concerning the hospital, Medic, and jail utilization patterns of Moore Place tenants. The UNC Charlotte research team incorporated analysis of these data elements. With the exception of jail utilization information, the sample for each part of the study consisted of consenting participants from the new tenants (n=85) at Moore Place. Jail utilization information was obtained from publicly available data from the Mecklenburg Sheriff's Department. Tenants were able to choose the components of the evaluation in which they participated. Thus, the sample sizes of the evaluation components vary, as tenants chose to participate in some components and not others. Each component is described below. The project was approved by the UNC Charlotte IRB.

Part 1: Housing, Clinical, and Social Stability of Clients

First, the study examined the *impact of the program on the housing, clinical, and social stability of its tenants* in the first month of their residence and after 6, 12, and 24 months living at Moore Place. Overall, this component of the project aimed to 1) understand the impact of Moore Place on the individuals it serves; 2) provide empirical feedback to Urban Ministry Center on what is working and what issues may need further attention in service delivery; and, 3) build capacity at Urban Ministry Center to effectively evaluate its supportive housing programs.

Prior to the Moore Place Evaluation Project, the research team proposed an evaluation plan. In collaboration with staff from Moore Place and Urban Ministry Center, the research team determined that to complete the project with the available budget, Ms. Liz Clasen-Kelly, Associate Director of Urban Ministry Center would serve as a Co-Investigator of the project and assume responsibility for collecting and recording data. Ms. Clasen-Kelly is not

involved in daily activities or service provision at Moore Place. Prior to collecting data, she and the volunteers she recruited for data collection and data entry successfully completed the Social/Behavioral Research (SBR) modules of the Collaborative IRB Training Initiative (CITI) and attended a training provided by Dr. Thomas that discussed the purpose of the project, research ethics, interviewing skills, the data collection instruments, and potential challenges that might arise during data collection. Ms. Clasen-Kelly completed an Individual Investigator agreement for the UNC Charlotte Office of Research Compliance. The volunteers completed Volunteer Agreements developed for this project and approved by the UNC Charlotte Institutional Review Board (IRB). The agreements confirmed the completion of CITI training, Dr. Thomas's training, and the expected treatment of confidential information. Dr. Thomas, and her UNC Charlotte research team completed data analysis and compiled interim and final reports.

During Year 1 of the Evaluation Project, baseline data were collected from research participants within one month of moving into Moore Place. Subsequent phases of data collection occurred approximately six months, one year, and two years after the baseline interview.

Research Questions & Design. This part of the study addressed the following research questions:

1. What are the characteristics of the individuals being served by Moore Place?
2. Does participation in Moore Place improve tenant quality of life?
3. Does participation in Moore Place improve tenant housing stability?
4. Does participation in Moore Place improve tenant clinical stability? Specifically,
    - Does participation in Moore Place stabilize or improve tenant's mental health?
    - Does it improve tenant perceptions of physical and mental health?
    - How does it impact substance use?
5. Does participation in Moore Place improve tenant social stability? Specifically, does it increase perceived social support from family and friends?

The Moore Place Evaluation Project addressed these questions by utilizing a prospective longitudinal one group pretest-posttest research design.

Sample. The sample consisted of consenting participants from the new tenants (n=85) at Moore Place. The final response rate was 55% (n=47).

Data Collection. This research project utilized both administrative and clinical data collected by the Moore Place Clinical Services staff and original data collected using the instruments and open-ended questions described below. Prior to clinical assessment, tenants were informed that their information may be used for research purposes to improve the services offered by Moore Place. Each tenant signed a waiver that indicated that they understand this and consent to it. The study utilized demographic information collected in the program's administrative database and standardized assessment information collected by clinicians at intake and periodically thereafter.

In addition to data collected by Moore Place clinical staff, original data was collected from approximately February 2012 – June 2014. Participants took part in four face-to-face interviews that included both quantitative and qualitative items. Prior to baseline data collection, participants were informed of the study purpose and their research rights, and each signed a consent form. Baseline observations (measures) were obtained during the first month of entry into permanent housing. Moore Place opened on January 31, 2012 and was fully occupied within 5 months of opening. Subsequent measures happened after approximately 6 months after baseline measures and again at 12 and 24 months after baseline measures (Greenwood et al., 2006). The same set of quantitative items was administered at each time point. Each instrument was chosen based, in part, on its ability to measure change over time. One qualitative question was measured at baseline. All other qualitative questions are administered at all subsequent time points. Research participants received a credit for their choice of household goods valued at $10 or more (ex. Tupperware set, Teflon pan, dishtowel set, etc.) for each interview in which they participated.

As noted above, standardized interviews were conducted by a group of volunteers who have not participated in service provision at Moore Place or Urban Ministry Center and did not participate in service provision for the duration of the study. Volunteer interviewers were recruited from a pool of volunteers who had participated in a prior Urban Ministry Center research project, the Vulnerability Index conducted in February 2010. Those volunteers received training in order to conduct interviews with chronically homeless individuals in shelters, street camps, and jail. Additional volunteer interviewers were recruited among individuals that had a previous volunteer history with Urban Ministry Center in front desk and other support roles, excluding direct service provision. Volunteers who have provided direct services were not included in recruitment efforts in order that study participants' privacy and perceptions of privacy are protected. After the volunteer training by Dr. Thomas, Ms. Clasen-

Kelly supervised all data collection and data entry activities. Interviews took place in the tenant's apartment or in one of the multipurpose rooms at Moore Place.

Original data were collected during structured interviews using standardized instruments that have a prior history of effective use with the homeless or similarly vulnerable populations. Table 49 describes the measures that were used to address the research questions.

Table 53: Research Questions and Measures

Research Questions	Data Sources & Measures
	Tenant Characteristics
What are the characteristics of the individuals being served by Moore Place?	**Demographic information -** age, race, ethnicity, veteran status, move-in date, income source, cash income, benefit source, non-cash benefits, education level, disabling conditions, and length of homelessness. This information was collected by the Moore Place clinical services team as a part of standard assessment.
	Housing Stability
Does participation in Moore Place improve tenant housing stability?	Housing stability was assessed by two indicators – remaining housed at Moore Place and increase in income from benefits and/or employment. This information was collected by the Moore Place clinical services team as a part of standard assessment.
	Clinical Stability
Does participation in Moore Place improve tenant quality of life?	The **Wisconsin Quality of Life Questionnaire (W-QLI)** has been extensively evaluated regarding its psychometric properties and has been found to have good reliability and construct validity. The dimensions of the instrument have been established to have predictive power and clinical utility (Caron et al., 2003). Test-retest reliability has been examined in the WQOL with percentages varying from 0.82 to 0.87 for each domain and total score. Convergent validity has also been assessed using Spitzer's QL-Index (r=0.91) and the Spitzer's Uniscale (r=0.68) (Becker et al., 1993).This information was collected by the UNC Charlotte/Urban Ministry Center research team.
Does participation in Moore Place stabilize or improve tenant's mental health?	The **PTSD Checklist - Civilian Version (PCL-C)** has strong internal consistency and good test-retest reliability. There was also support for convergent validity (r >.75). The test-retest coefficient for the total scores in this instrument were .92 (Ruggiero et al., 2003). This instrument is administered by the clinical staff upon program entry, at 6 months of residency, and annually thereafter. This information was

Research Questions	Data Sources & Measures
	collected by the Moore Place clinical services team.
	The **Modified Colorado Symptom Index (MCSI)** was examined in terms of reliability and construct validity in a national sample of the homeless population. The MCSI was found to be a reliable and valid measure of psychological symptoms within this population. High internal consistency (.90) and test-retest coefficients (average .79) revealed the reliability of the instrument, while the instrument's relationship to other measures showed good construct validity and responsiveness to change (Conrad et al., 2001). This information was collected by the UNC Charlotte/Urban Ministry Center research team.
Does it improve tenant perceptions of physical and mental health?	The **SF 36v2** has been extensively tested for reliability and validity and has consistently achieved and exceeded high psychometric standards. Published reliability statistics for the instrument have exceeded the minimum standards of .70 (Tsai, Bayliss, & Ware, 1997) and often exceed .80. The reliability for the physical and mental summary scores exceed .90 (Ware et al., 1994). SF36 Version 2, used in this study has improvements in item wording and format with no increase in respondent burden. This information was collected by the UNC Charlotte/Urban Ministry Center research team.
How does it impact tenant substance use?	The **Addiction Severity Index** (ASI) has been tested in many different populations for reliability and validity and has far exceeded minimum standards (McLellan et al., 1985). It has also been tested in homeless individuals who are substance users and found to be acceptable in terms of reliability and validity (Zanis et al., 1994). This study used the the 30 Day and Lifetime Substance Abuse subscales at baseline and the 30 Day subscale at subsequent data collection. This information was collected by the UNC Charlotte/Urban Ministry Center research team.
	Social Stability
Does it increase perceived social support from family and friends?	The **Perceived Social Support Friends and Perceived Social Support Family (PSS Fr & PSS Fa)** instruments have been found to be reliable, valid, and generalizable methods of assessing an individual's perception of social support from family and friends. Reliability, construct validity, and criteron related validity have been measured. Cronbach's alpha was calculated, .91 for PSS-Fa and .92 for PSS-Fr, indicating internal consistency. The correlations between Fr and Fa were also calculated (.40 when $p<.001$) (Lyons, 1988). This information was collected by the UNC Charlotte/Urban Ministry Center research team.

Research Questions	Data Sources & Measures
	Qualitative Interviews
Qualitative Interviews	• Besides where you sleep, what do you think will change the most for you now that you have your own apartment? [at baseline] • Besides where you sleep, what has changed the most for you since you moved into your own apartment [subsequent interviews] • What do you think Moore Place does well? [subsequent interviews] • What improvements do you think that Moore Place could make to better serve its residents? [subsequent interviews] • Is there anything else you would like to add about your experience at Moore Place? This information was collected by the UNC Charlotte/Urban Ministry Center research team.

Data Analysis. Univariate, bivariate, and multivariate statistics were performed using SPSS. The instruments were coded and scored according to their respective scoring manuals. Repeated measures analysis of variance (ANOVA) and when relevant, Post hoc *t* tests were used to examine the difference between time periods for all measures. Qualitative data were analyzed using Atlas.ti.

Part 2: Hospital Utilization Patterns of Tenants

The second component of the Evaluation Project examined the *hospital utilization patterns* of Moore Place tenants. The aim of this component of the research was to 1) examine the impact of Moore Place on tenant utilization behavior and 2) examine the impact of Moore Place on local hospital systems.

Research Questions & Design. This part of the study addressed the following research question: How does Moore Place impact the hospital utilization patterns of its tenants? The Evaluation Project addressed this question through a retrospective cohort design using data from itemized hospital bills collected by Urban Ministry Center staff.

Sample. The sample consisted of consenting participants from the new tenants (n=85) at Moore Place. The final response rate was 68% (n=50).

Data Collection. For consenting participants, utilization patterns were examined at four time periods: Two years prior to tenant entry into Moore Place, one year prior to tenant entry, one year following tenant entry into Moore Place, and two years following tenant entry

into Moore Place. This portion of the study utilized data collected by Urban Ministry Center from Novant Health Care and Carolinas Healthcare System. The following data elements were collected at each time period:

- Date Entered ER (Novant, CHS)
- Date Exited ER/Hopital (Novant, CHS)
- Admitted Days in Hospital (Novant, CHS)
- Billed Amount (Novant, CHS)
- Amount by Funding Source - Charity Care (Novant, CHS)
- Amount by Funding Source - Medicaid/Medicare (Novant, CHS)
- Amount by Funding Source - Other Govt (Novant)
- Amount by Funding Source - Self Pay Discount (Novant)
- Amount by Funding Source - Administrative ADJ (Novant)
- Amount by Finding Source - Meck County (CHS)
- Amount by Funding Source - Unisured Discount (CHS)
- Amount by Funding Source - Sliding Scale (CHS)
- Amount by Funding Source - Liability (CHS)
- Amount by Funding Source - CHS-Interco (CHS)
- Amount by Funding Source - Jail (CHS)
- Amount by Funding Source - VA (CHS)
- Amount by Funding Source - Access 1 (CHS)
- Total Number of Outpatient Visits/Procedures (CHS)
- Total Bill Associated with Outpatient Care (CHS)
- Total Pharmacy Bill (if not associated with ER, Hospital, or OutpatientVisit)

Data Analysis. Univariate, bivariate, and multivariate statistics were performed using SPSS. Specifically, Paired sample *t* tests were used to examine differences in utilization between the time period before moving into Moore Place and the same time period after moving into Moore Place.

Part 3: Medic Utilization Patterns of Tenants

The third component of the Evaluation Project examined the *Medic utilization patterns* of Moore Place tenants. The aim of this component of the research was to 1) examine the impact of Moore Place on ambulance usage of the Mecklenburg County Emergency Medical Services agency and 2) examine the impact of Moore Place on utilization behavior.

Research Questions & Design. This part of the study addressed the following research question: How does Moore Place impact the ambulance patterns of its tenants? The Evaluation Project addressed this question through a retrospective cohort design, using Medic administrative data collected by Urban Ministry Center staff.

Sample. The sample consisted of consenting participants from the new tenants (n=85) at Moore Place who also participated in the hospital study at Year 2 (n=X). The final response rate was 55% (n=47).

Data Collection. For consenting participants, utilization patterns were examined at four time periods: Two years prior to tenant entry into Moore Place, one year prior to tenant entry, one year following tenant entry into Moore Place, and two years following tenant entry into Moore Place. This portion of the study utilized data collected by Urban Ministry Center from Novant Health Care and Carolinas Medical Center. The following data elements were collected at each time period:

- Date of Service Call
- Transported (yes or no)
- Where transported
- Bill
- Amount Paid
- Payment Source

Data Analysis. Univariate, bivariate, and multivariate statistics were performed using SPSS. Specifically, Paired sample *t* tests were used to examine differences in utilization between the time period before moving into Moore Place and the same time period after moving into Moore Place.

Part 4: Jail Utilization Patterns of Tenants

The final component of the Evaluation Project examined the *jail utilization patterns* of Moore Place tenants. The aim of this component of the research was to examine the impact of Moore Place on arrests and incarceration in the Mecklenburg County Jail.

Research Questions & Design. This part of the study addressed the following research question: How does Moore Place impact the jail utilization patterns of its tenants? The Evaluation Project addressed this question through a retrospective cohort design using publically available administrative data collected by Urban Ministry Center staff.

Sample. The sample consisted of consenting participants from the new tenants (n=85) at Moore Place who also participated in the hospital study. Because the data for this portion of the study was publically available, the study could continue to follow tenant jail utilization even if they chose not to participate in the remainder of the study. The final response rate was 61% (n=52).

Data Collection. Utilization patterns were examined at four time periods: Two years prior to tenant entry into Moore Place, one year prior to tenant entry, one year following tenant entry into Moore Place, and two years following tenant entry into Moore Place. This portion of the study utilized data collected by Urban Ministry Center from publically available data from the Mecklenburg County Jail. The following data elements were collected at each time period:

- Arrest
- Date Entered Jail
- Date Exited Jail
- Charges

Data Analysis. Univariate, bivariate, and multivariate statistics were performed using SPSS. Specifically, Paired sample *t* tests were used to examine differences in utilization between the time period before moving into Moore Place and the same time period after moving into Moore Place.

Study Limitations

As with any research endeavor, this project reflects limitations. First, although the research team sought to enhance the rigor of the project by including multiple measurements over time, due to financial constraints, the project did not include a control or comparison group. The lack of such a comparison makes it impossible to more conclusively link the changes or lack of changes found in the study to the intervention. In this sense, findings remain tentative.

Second, baseline data in the first component of the Evaluation Project were collected on tenants within 30 days of their move-in to Moore Place. Notable changes may have occurred in tenants *before* baseline measurements were captured – i.e., tenants already felt improvements in their lives because they were no longer homeless and had access to services at Moore Place. Though not practically feasible, collecting baseline measures prior to move-in may have better captured changes, real or perceived, that had not yet occurred.

Third, the first component of the Evaluation Project relies largely on self-report data and as such may be subject to social desirability bias. Such a bias suggests that study participants may answer questions with answers they feel are more socially acceptable to program staff or those collecting the data. Moore Place is a low barrier program and as such, when it began, was substantially different than any program of its kind in the Charlotte area.

Study participants, many with extensive histories of homelessness, are familiar with programs that have little to no tolerance for substance use or behavioral disturbances that result from mental health disorders. Thus to preserve their housing, they may answer questions in a way that is more acceptable to the programs with which they are familiar. Over the study period as tenants recognize that their residency is not tied to service success or sobriety, they may become more transparent during interviews. This may result in more honesty and disclosure in later phases of research resulting in scores that may suggest more mental health and substance abuse issues.

Finally, the hospital billing data used in the second and third components of the Evaluation Project may or may not be an accurate reflection of the specific costs of providing care. Depending on the payment source, the billed amount can reflect a discount. For example, payments from Medicaid, a primary payment source, reflect a discount both in the amount billed and the amount paid. This discount was not recorded on the itemized bills. Despite this limitation, the positive impact of Moore Place on tenant utilization patterns can be observed. While the exact amount billed should be viewed tentatively, the reduction in ER utilization and the length of hospitalization suggests reduction in in associated costs.

APPENDIX D: TENANT SUGGESTIONS

The three tables below report tenant responses to the question, "What improvements does Moore Place need to make to better serve its residents?" The first table reports responses from the 6 month data collection period. Subsequent tables report responses from the Year 1 and Year 2 data collection periods.

Table 54: Potential Improvements, Examples of Tenant Responses at 6 months (n=73)

Category	Examples of Tenant Responses
Activities	"Nothing except open the art room more. I'd like to have a cookout."
	"More activities – physically – stretching for bad backs."
	"More classes – especially dance."
	"Offer more educational opportunities here."
Apartment	"I need a stove. Don't want to come to the kitchen to bake."
	"Bedroom door, oven, tub…"
	"Need [a new] mattress – too hard."
Assistance	"Maybe extra can goods."
	"I would like to be able to work and earn some money."
	"Transportation/bus passes to basic things like grocery shopping or post office."
Building	"Maybe furnish a patio for non-smokers/non-drinkers."
	"Make phone calls easier. Put phone in the hallway."
	"Add drink machine for residents."
	"Computer room not available at night or on weekends. Ovens not available enough."
	"Smoking area is too messy."
Neighbors	"People make too much noise at night, banging on your door, stomping too loud, asking for stuff, running up and down the halls. A whole lot of disrespect for people here."
	"To have a better system to deal with tenant problems with each other. Some type of disciplinary actions."
	"None. It's not what Moore Place needs to change. It's what some of the residents need to change."
Staff	"Mind your business. They keep tabs on you, sometimes it's aggravating."
	"Better control at keeping residents clean. Need to be more observant of residents."
	"Better control of alcohol abuse outside of Moore Place – in parking lot."

Table 55: Potential Improvements, Examples of Tenant Responses at Year 1 (n=58)

Category	Examples of Tenant Responses
Nothing	"4 stars!"
	"None – if it ain't broke, don't fix it."
	"Can't think of any."
Activities	"Exercise room and school program."
	"Group dinners – potlucks. BBQ outdoors. More variety with craft offerings – oil painting. Contests – talent show."
	"Horseshoe ring with steel horseshoes."
	"Field trip to hike and get fresh air – hiking trails."
	"Would be nice to have a little exercise equipment – treadmill, weights, etc."
Apartment	"Computers and wifi connections in the apartments."
	"I need a stove [*sic*]. I like to cook."
Assistance	"Coordinating with community – human resources for employment purposes"
	"Local employment training program to make additional income."
	"Help out with transportation more often."
	"Stay out of people's business."
Building	"Community room to stay open 24 hours."
	"Keep computer lab open longer on weekends and holidays."
	"Offer the community room 24/7 to play cards, interact, watch TV, etc."
	"Clean elevators more regularly."
	"Improve on insect extermination."
	"Build a tub – hot tub or swimming pool."
Neighbors	"When tenants drink it can be aggravating, but I stay away and don't pay them attention."
	"More strict rules for rule breakers."
	"Too lenient on alcohol – drinking is a problem – especially smoking patio – a lot of begging going on."

Table 56: Potential Improvements, Examples of Tenant Responses at Year 2 (n=47)

Category	Examples of Tenant Responses
Nothing – Keep it up!	"Keep on keeping the motor running."
	"Keep doing what doing. Doing great job!"
	"None - if it ain't broke, don't fix it."
	"Build more housing for other people outside."
Activities	"More cookouts."
	"Better services to assist residents in getting their GEDs."
Assistance	"Some of the most disabled people need checking in on more often because they can have problems that no one is aware of for a day or two."
	Food "They should build a soup kitchen around here so we don't need to go all the way to Urban Ministry." "I would appreciate more food everyday - if they provide breakfast and dinners." "To have lunches. You can only cook so much out of the microwave."
	Specialized Services "Need substance abuse counselors." "Need employment specialists." "Also, need eye specialists to check on folks here."
	Transportation "Increase availability of transportation."
Building	"Move smoking area."
	"A weight room."
	"Washing machines need to be sanitized."
	"Too much traffic in and out in the night - 2 - 3 am."
	"Moore Place needs more monitoring after hours - ie. crank phone calls - so MP can continue to be a safe place after the staff leaves."
Neighbors	**General** "Some residents no showering and taking care of themselves." "Get a group who pay rent. Stop prostitution here." "Some of the people."
	Substance Use "I wish they would take care of the alcohol and drug problems in the place. Have to force people to go to our programs." "Be more strict with residents who use alcohol/drugs - get them in treatment." "Keep crack heads out. They are thieves and liars. They steal food, phones, money. I have had three phones stolen."
Relationships/ Interactions with Tenants	"Take time to find out what is going on with each individual."
	"...ask more opinions from residents. Address situations sooner."
	"Stop making decisions when you don't live here (ex. downstairs bathroom locked...)."
	"Stop being afraid of being close to the tenants. Being close doesn't mean we are going to use you."