U.S. Department of Health and Human Services
Assistant Secretary for Planning and Evaluation
Office of Disability, Aging and Long-Term Care Policy

PICTURE OF HOUSING AND HEALTH PART 2:

MEDICARE AND MEDICAID USE AMONG OLDER ADULTS IN HUD-ASSISTED HOUSING, CONTROLLING FOR CONFOUNDING FACTORS

August 2016

Office of the Assistant Secretary for Planning and Evaluation

The Office of the Assistant Secretary for Planning and Evaluation (ASPE) is the principal advisor to the Secretary of the Department of Health and Human Services (HHS) on policy development issues, and is responsible for major activities in the areas of legislative and budget development, strategic planning, policy research and evaluation, and economic analysis.

ASPE develops or reviews issues from the viewpoint of the Secretary, providing a perspective that is broader in scope than the specific focus of the various operating agencies. ASPE also works closely with the HHS operating agencies. It assists these agencies in developing policies, and planning policy research, evaluation and data collection within broad HHS and administration initiatives. ASPE often serves a coordinating role for crosscutting policy and administrative activities.

ASPE plans and conducts evaluations and research--both in-house and through support of projects by external researchers--of current and proposed programs and topics of particular interest to the Secretary, the Administration and the Congress.

Office of Disability, Aging and Long-Term Care Policy

The Office of Disability, Aging and Long-Term Care Policy (DALTCP), within ASPE, is responsible for the development, coordination, analysis, research and evaluation of HHS policies and programs which support the independence, health and long-term care of persons with disabilities--children, working aging adults, and older persons. DALTCP is also responsible for policy coordination and research to promote the economic and social well-being of the elderly.

In particular, DALTCP addresses policies concerning: nursing home and community-based services, informal caregiving, the integration of acute and long-term care, Medicare post-acute services and home care, managed care for people with disabilities, long-term rehabilitation services, children's disability, and linkages between employment and health policies. These activities are carried out through policy planning, policy and program analysis, regulatory reviews, formulation of legislative proposals, policy research, evaluation and data planning.

This report was prepared under contract #HHSP23320100018WI between HHS's ASPE/DALTCP and the Lewin Group. For additional information about this subject, you can visit the DALTCP home page at https://aspe.hhs.gov/office-disability-aging-and-long-term-care-policy-daltcp or contact the ASPE Project Officer, Emily Rosenoff, at HHS/ASPE/DALTCP, Room 424E, H.H. Humphrey Building, 200 Independence Avenue, S.W., Washington, D.C. 20201. Her e-mail address is: Emily.Rosenoff@hhs.gov.

PICTURE OF HOUSING AND HEALTH PART 2: Medicare and Medicaid Use Among Older Adults in HUD-Assisted Housing, Controlling for Confounding Factors

The Lewin Group

August 2016

Prepared for
Office of Disability, Aging and Long-Term Care Policy
Office of the Assistant Secretary for Planning and Evaluation
U.S. Department of Health and Human Services
Contract #HHSP23320100018WI

The opinions and views expressed in this report are those of the authors. They do not necessarily reflect the views of the Department of Health and Human Services, the Department of Housing and Urban Development, the contractor or any other funding organization.

TABLE OF CONTENTS

ACRONYMS v

EXECUTIVE SUMMARY vii

I. INTRODUCTION 1
- A. Background 1
- B. Summary of the First Report: "Picture of Housing and Health" 2
- C. Picture of Housing and Health Part 2: Study Objectives and Hypotheses 3

II. METHODS 5
- A. Data 5
- B. Study Samples 6
- C. Outcomes 8
- D. Statistical Methods 9

III. RESULTS 12
- A. Medicare-Medicaid Enrollees Residing in the NYC/NJ MSA, Age 65 or Older, 2008 13
- B. Medicare-Medicaid Enrollees Residing in Study Geographic Areas Other Than the NYC/NJ MSA, Age 65 or Older, 2008 17
- C. Medicare-only Beneficiaries Residing in the NYC/NJ MSA, Age 65 or Older, 2008 21
- D. Medicare-only Beneficiaries Residing in Study Geographic Areas Other Than the NYC/NJ MSA, Age 65 or Older, 2008 25

IV. DISCUSSION 30
- A. Summary of Results 30
- B. Limitations 32
- C. Conclusion 33

APPENDICES
- APPENDIX A. Data Sources and Variable Definitions A-1
- APPENDIX B. Unadjusted Results A-14

LIST OF FIGURES AND TABLES

FIGURE ES1. OR of Utilizing any Health Care Service for MMEs Receiving HUD Assistance Relative to MMEs Not Receiving Assistance, Age 65 or Older, 2008 x

FIGURE ES2. Odds Ratio of Utilizing any Health Care Service for Medicare-only Beneficiaries Receiving HUD Assistance Relative to Beneficiaries Not Receiving Assistance, Age 65 or Older, 2008 xi

FIGURE 1. Study Sample Inclusions and Resulting Sample Size 6

FIGURE 2. OR of Utilizing any Health Care Service for HUD-assisted MMEs and Unassisted MMEs Residing in the NYC/NJ MSA, Age 65 or Older, 2008 15

FIGURE 3. OR of Utilizing any Health Care Service for Beneficiaries Receiving HUD Assistance, HUD-assisted MMEs and Unassisted MMEs Residing in Study Geographic Areas Other than the NYC/NJ MSA, Age 65 or Older, 2008 20

FIGURE 4. OR of Utilizing any Health Care Service, HUD-assisted and Unassisted Medicare-only Beneficiaries in the NYC/NJ MSA, Age 65 or Older, 2008 25

FIGURE 5. OR of Utilizing any Health Care Service, HUD-assisted and Unassisted Medicare-only Beneficiaries Residing in Study Geographic Areas Other than the NYC/NJ MSA, Age 65 or Older, 2008 27

TABLE 1. HUD Tenant-level and CMS Individual-level Administrative Data 5

TABLE 2. Final Sample Consisting of Four Subgroups Stratified, by MME Status and NYC/NJ MSA 8

TABLE 3. Proportion of MME and Medicare-only Beneficiaries in Study Sample who Received HUD Assistance, Age 65 or Older, 2008 12

TABLE 4. Demographic, Clinical, and Prior Health Care Utilization, HUD-assisted MMEs and Unassisted MMEs Residing in the NYC/NJ MSA, Age 65 or Older, 2008 14

TABLE 5. OR of Utilizing any Health Care Service and Parameter Estimates of Payment, HUD-assisted MMEs and Unassisted MMEs Residing in the NYC/NJ MSA, Age 65 or Older, 2008 16

TABLE 6. Demographic, Clinical, and Prior Health Care Utilization, HUD-assisted MMEs and Unassisted MMEs Residing in Study Geographic Areas Other than the NYC/NJ MSA, Age 65 or Older, 2008 18

TABLE 7. OR of Utilizing any Health Care Service and Parameter Estimates of Payment, HUD-assisted MMEs and Unassisted MMEs Residing in Study Geographic Areas Other than the NYC/NJ MSA, Age 65 or Older, 2008 21

TABLE 8. Demographic, Clinical, and Prior Health Care Utilization, HUD-assisted and Unassisted Medicare-only Beneficiaries Residing in the NYC/NJ MSA, Age 65 or Older, 2008 22

TABLE 9. OR of Utilizing any Health Care Service and Parameter Estimates of Payment, HUD-assisted and Unassisted Medicare-only Beneficiaries in the NYC/NJ MSA, Age 65 or Older, 2008 24

TABLE 10. Demographic, Clinical, and Prior Health Care Utilization, HUD-assisted and Unassisted Medicare-only Beneficiaries Residing in Study Geographic Areas Other than the NYC/NJ MSA, Age 65 or Older, 2008 26

TABLE 11. OR of Utilizing any Health Care Service and Parameter Estimates of Payment, HUD-assisted and Unassisted Medicare-only Beneficiaries Residing in Study Geographic Areas Other than the NYC/NJ MSA, Age 65 or Older, 2008 28

TABLE A1. Counties Included in Each of the 12 Study Geographic Areas A-3

TABLE A2. Assignment of Chronic Conditions into 9 Chronic Condition Groups A-11

TABLE A3. Medicare Health Care Utilization Variable Definitions A-12

TABLE A4. Dependent Outcome Definitions and Model Specifications A-13

TABLE B1. Unadjusted Health Care Utilization and Payment, HUD-assisted MMEs and Unassisted MMEs Residing in the NYC/NJ MSA, Age 65 or Older, 2008 ..... A-15

TABLE B2. Unadjusted Health Care Utilization and Payment, HUD-assisted MMEs and Unassisted MMEs Residing in Study Geographic Areas Outside the NYC/NJ MSA, Age 65 or Older, 2008 ..... A-16

TABLE B3. Unadjusted Health Care Utilization and Payment, HUD-assisted and Unassisted Medicare-only Beneficiaries Residing in the NYC/NJ MSA, Age 65 or Older, 2008 ..... A-17

TABLE B4. Unadjusted Health Care Utilization and Payment, HUD-assisted and Unassisted Medicare-only Beneficiaries Residing in Study Geographic Areas Other than the NYC/NJ MSA, Age 65 or Older, 2008..... A-18

ACRONYMS

The following acronyms are mentioned in this report and/or appendices.

ADI	Area Deprivation Index
AMI	Area Median Income
CCW	Chronic Condition Warehouse
CMS	Centers for Medicare & Medicaid Services
DIB	Disability Insurance Benefits
DME	Durable Medical Equipment
DRG	Diagnosis Related Group
ED	Emergency Department
ER	Emergency Room
ESRD	End Stage Renal Disease
FFS	Fee-For-Service
FIPS	Federal Information Processing Standards
GDIT	General Dynamics Information Technology
HCBS	Home and Community-Based Services
HHS	U.S. Department of Health and Human Services
HMO	Health Maintenance Organization
HUD	U.S. Department of Housing and Urban Development
MAX	Medicaid Analytic eXtract
MME	Medicare-Medicaid Enrollee
MSP	Medicare Savings Program
NF	Nursing Facility
NYC/NJ MSA	New York City/New Jersey Metropolitan Statistical Area
OLS	Ordinary Least Squares
OR	Odds Ratio
PHA	Public Housing Authority
PIC	Public and Indian Housing Information Center
PIH	Public and Indian Housing
PMPM	Per Member Per Month
PRAC	Project Rental Assistance Contract

RAP	Rental Assistance Payment
SD	Standard Deviation
SNF	Skilled Nursing Facility
SSA	U.S. Social Security Administration
SSI	Supplemental Security Income
TOS	Type of Service
TRACS	Tenant Rental Assistance Certification System

EXECUTIVE SUMMARY

Background

In March 2014, The Lewin Group (Lewin) produced a report for the U.S. Department of Health and Human Services (HHS)/Office of the Assistant Secretary for Planning and Evaluation and the U.S. Department of Housing and Urban Development (HUD) titled *Picture of Housing and Health: Medicare and Medicaid Use Among Older Adults in HUD-Assisted Housing*.[1] The study included descriptive comparisons that showed HUD-assisted Medicare beneficiaries had 58% higher Medicare payments than unassisted Medicare beneficiaries living in the community. The higher expenditures for HUD-assisted Medicare beneficiaries in part reflected a higher proportion enrolled in Medicaid (70% vs. 13%). Such Medicare-Medicaid Enrollees (MMEs, or Duals) have spending almost twice as high as Medicare-only beneficiaries.[2] Yet, examining only MMEs age 65+, HUD-assisted MMEs still had more chronic conditions which translated into higher health care utilization and payments than unassisted MMEs in the community.

The descriptive results from *The Picture of Housing and Health* study began to shed light on how HUD-assisted Medicare beneficiaries differed from the unassisted Medicare beneficiaries in the community. However, descriptive statistics failed to account for several factors. First, the results did not adjust for demographic characteristics or health care conditions associated with health care utilization beyond MME status. Second, the New York City/New Jersey Metropolitan Statistical Area (NYC/NJ MSA) represented over half the beneficiaries in the sample. Therefore, the differences in the NYC/NJ MSA assisted population could account for a number of the observed differences. Finally, we were unable to identify all nursing facility (NF) stays, regardless of payer, with our current data sources, which led to us excluding all beneficiaries who had any days in a Medicare covered skilled nursing facility (SNF) stay following a hospitalization or Medicaid covered NF stay.

Study Objective

This report, *Picture of Housing and Health Part 2: Medicare and Medicaid use among older adults in HUD-assisted housing, controlling for confounding factors*, expands on the first *Picture of Housing and Health* report. In particular, we addressed

[1] The Lewin Group. (2014). Picture of Housing and Health: Medicare and Medicaid Use Among Older Adults in HUD-Assisted Housing. Prepared for the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation. Available online at: https://aspe.hhs.gov/basic-report/picture-housing-and-health-medicare-and-medicaid-use-among-older-adults-hud-assisted-housing.

[2] Kaiser Family Foundation. (2012). Medicare's Role for Dual Eligible Beneficiaries. Issue Brief by Gretchen Jacobson, Tricia Neuman, and Anthony Damico.

each of the three limitations outlined above. First, we stratified the sample into four subgroups that distinguish beneficiaries based on geography (NYC/NJ MSA vs. other geographic areas in the study sample) and MME status. Next, we identified number of days in a NF during 2008 using the Medicare Timeline file. This allowed us to be more inclusive in our study sample; we included beneficiaries who were in a NF 180 days or less as opposed to excluding all beneficiaries with any indication of a NF stay. Finally, we conducted linear and logistic regressions to examine if the higher health care utilization and spending for HUD-assisted Medicare beneficiaries relative to unassisted Medicare beneficiaries in the community identified in the first report remained after controlling for confounders.

We hypothesized that HUD-assisted Medicare beneficiaries' health care utilization and spending would remain higher than unassisted beneficiaries living in the community after controlling for confounders. The hypothesis was that beneficiaries receiving HUD assistance may be less-informed health care users and may forgo preventative or less costly health care services due to difficultly accessing health care services and, therefore, resort to more expensive services when the condition worsened. If the hypotheses were found to be true, it indicated that the vulnerable group of HUD-assisted Medicare beneficiaries, who have a high prevalence of chronic conditions and disabilities, may be a fruitful target group for policy interventions.

Methods

We created the sample from the matched dataset constructed in the *Picture of Housing and Health* study based on the 2008 HUD, HHS Centers for Medicare & Medicaid Services (CMS) Medicare, and CMS Medicaid data available at that time. We limited the study sample to Medicare beneficiaries age 65 or older with Parts A and B coverage not enrolled in a Medicare Health Maintenance Organization (i.e., Medicare Advantage) and who did not have 181 days or more in a NF in the 12 study jurisdictions (N=2,901,505). We stratified our sample into four subgroups:[3]

- MMEs in NYC/NJ MSA.
- MMEs in study geographic areas other than the NYC/NJ MSA.
- Medicare-only beneficiaries in NYC/NJ MSA.
- Medicare-only beneficiaries in study geographic areas other than the NYC/NJ MSA.

In order to test our hypotheses, we ran a series of regressions to examine the association between receiving HUD assistance and a number of health care utilization and payment outcomes. For each model, we included a binary indicator for receiving HUD assistance. The binary indicator for receiving HUD assistance estimates the effect of receiving HUD assistance on utilization and payment outcomes after accounting for

[3] See main report for a complete description on the rationale for the four subgroups.

the confounders included in the regression. We describe the control variables in the complete summary report.

Results

Medicare-Medicaid Enrollee Results

Figure ES1 presents the odds ratio (OR) of health care utilization for beneficiaries receiving HUD assistance estimated from the logistic regression models separately for the two MME subgroups. After accounting for differences in demographic, clinical, and prior health care use of the MMEs and characteristics of the markets[4] in which the MMEs reside:

- HUD-assisted MMEs were significantly less likely to have any acute inpatient stay and to have any Medicare covered SNF stay.

- The results on emergency department (ED) visits were mixed. HUD-assisted MMEs in NYC/NJ MSA were significantly less likely to have three or more ED visits, but there was no significant difference in having any ED visit. The opposite was found for HUD-assisted MMEs in the study geographies outside of the NYC/NJ MSA; HUD-assisted MMEs were significantly more likely to have any ED visit, but not more or less likely to have three or more ED visits.

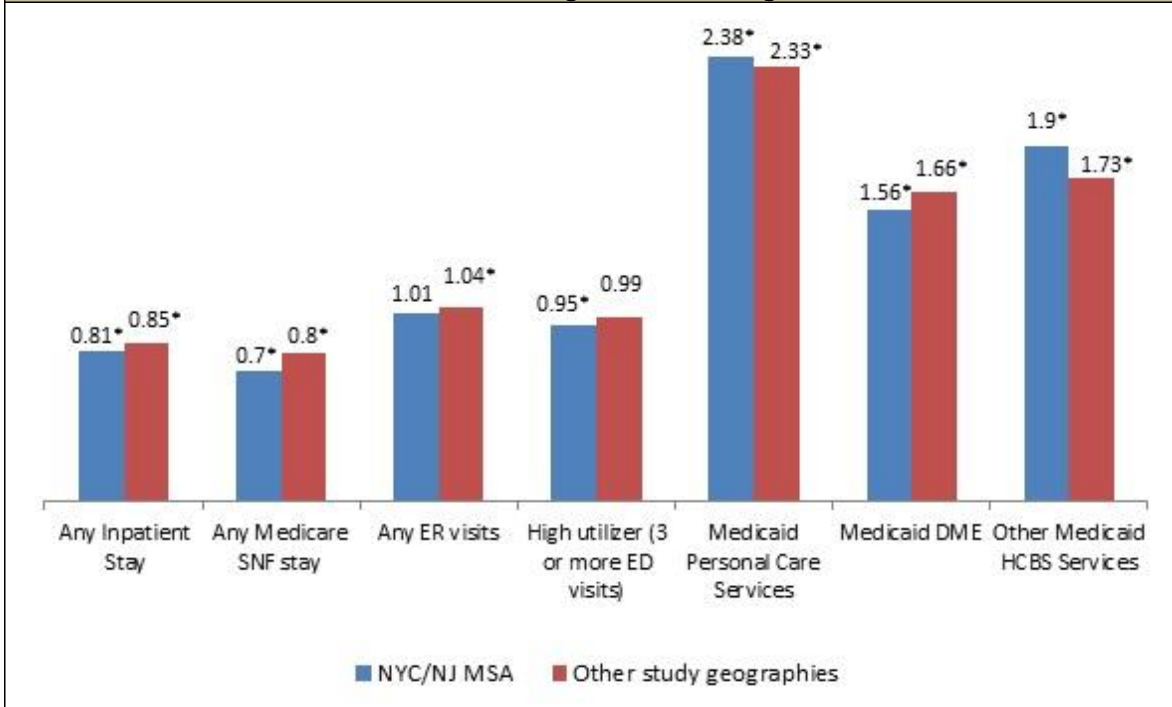
- The overall lower utilization, along with the lower payment among those with any acute inpatient stays, contributed to a significantly lower Medicare payment of $632 for HUD-assisted MMEs versus unassisted MMEs in NYC/NJ MSA and $523 for HUD-assisted MMEs versus unassisted MMEs in the other study geographic areas outside of the MSA (see report for full results).

- HUD-assisted MMEs who were fully eligible for Medicaid had higher utilization for Medicaid home and community-based services (HCBS) than unassisted MMEs. HUD-assisted MMEs were more than two times as likely to have any personal care services, more than 1.5 times as likely to have any use of durable medical equipment (DME), and more than 1.7 times as likely to have used other HCBS.

- This higher utilization of Medicaid covered services contributed to significantly higher Medicaid payments for HUD-assisted MMEs compared to unassisted MMEs ($798 in NYC/NJ MSA; $464 in the other study geographic areas) (see report for full results).

[4] See complete report for a complete listing of confounders.

FIGURE ES1. OR of Utilizing any Health Care Service for MMEs Receiving HUD Assistance Relative to MMEs Not Receiving Assistance, Age 65 or Older, 2008

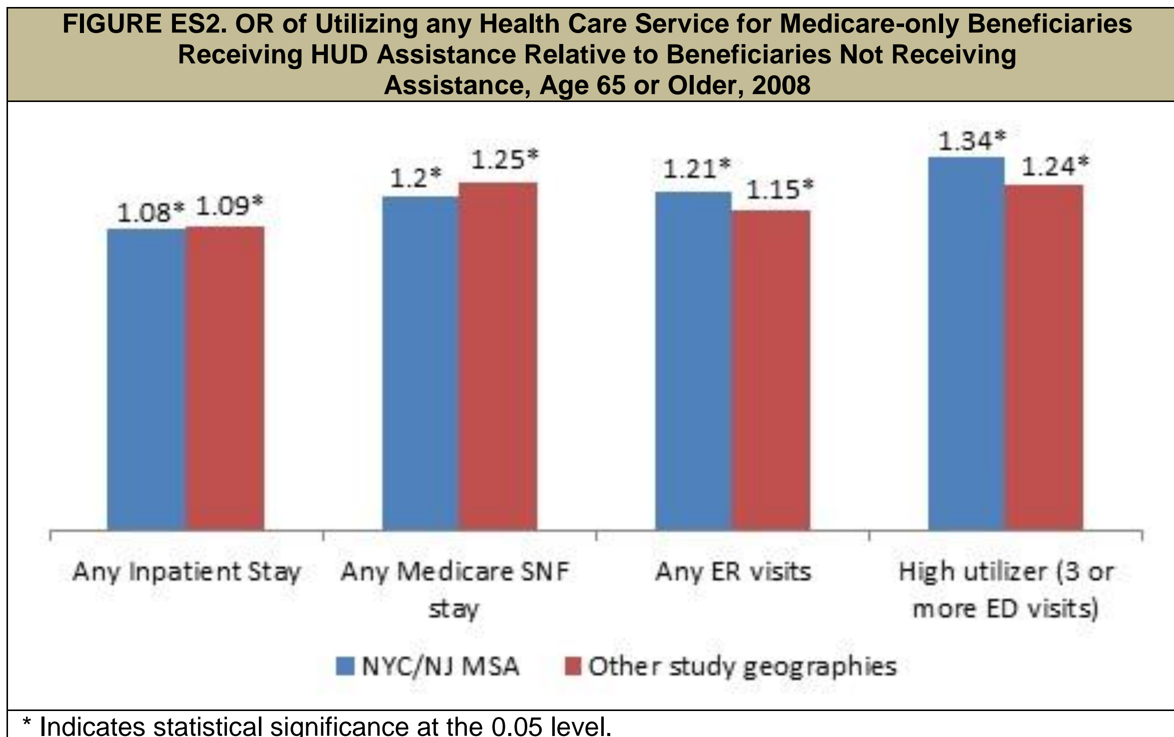


* Indicates statistical significance at the 0.05 level.
Personal care services, DME, and other HCBS are Medicaid covered services.

Medicare-only Beneficiaries Results

Figure ES2 presents the OR of health care utilization for beneficiaries receiving HUD assistance estimated from the logistic regression models separately for the two Medicare-only beneficiary subgroups. HUD-assisted Medicare-only beneficiaries had higher utilization than unassisted Medicare-only beneficiaries. HUD-assisted Medicare-only beneficiaries were more likely to have any inpatient stay, more likely to have any Medicare covered SNF stay, more likely to have any ED visit, and more likely to have three or more ED visits in 2008 relative to unassisted Medicare-only beneficiaries. Despite the fact that HUD-assisted Medicare-only beneficiaries were more likely to use the key health care services included in our analysis, there was no significant difference in the Medicare fee-for-service (FFS) payments between the two groups (see report for full results).

FIGURE ES2. OR of Utilizing any Health Care Service for Medicare-only Beneficiaries Receiving HUD Assistance Relative to Beneficiaries Not Receiving Assistance, Age 65 or Older, 2008



* Indicates statistical significance at the 0.05 level.

Discussion

To our knowledge, this study was the first attempt to compare health care utilization and spending between HUD-assisted Medicare beneficiaries and unassisted beneficiaries taking into account confounding factors. Knowing that the findings from the first report, *Picture of Housing and Health*,[5] found high prevalence of chronic conditions and higher health care utilization for HUD-assisted Medicare beneficiaries compared to unassisted beneficiaries, we sought to understand whether the characteristics of the sample could explain the higher utilization. This information could help inform targeted interventions and policies among specific HUD-assisted subgroups to ensure appropriate use of health care services and to better meet resident needs.

In summary, after taking into account characteristics associated with health care utilization and payment, this study demonstrates that HUD-assisted Medicare beneficiaries do not consistently have higher health care utilization and payment than unassisted Medicare beneficiaries as originally hypothesized. On one hand, HUD-assisted MMEs were less likely to use certain Medicare covered services, such as acute inpatient stays and SNF stays, and they had significantly lower Medicare FFS payments than unassisted MMEs. Conversely, HUD-assisted MMEs were much more likely to use Medicaid covered community-based supportive services such as personal care

[5] The Lewin Group. (2014). Picture of Housing and Health: Medicare and Medicaid Use Among Older Adults in HUD-Assisted Housing. Prepared for the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation. Available online at: https://aspe.hhs.gov/basic-report/picture-housing-and-health-medicare-and-medicaid-use-among-older-adults-hud-assisted-housing.

services, DME, and HCBS and have higher Medicaid FFS payments. This suggests that perhaps HUD-assisted MMEs were more aware of Medicaid covered community-based supportive services than unassisted MMEs. HUD-assisted Medicare-only beneficiaries were also more likely to have any inpatient stay, Medicare covered SNF stay, and ED visit, but it did not result in significantly higher Medicare FFS payments relative to the unassisted Medicare-only beneficiaries.

While this indicates that HUD-assisted beneficiaries are not using more acute care health care services than unassisted beneficiaries after controlling for confounding factors, they still represent a vulnerable group with a high prevalence of chronic conditions and disabilities. The study demonstrates that HUD-assisted MMEs may be a fruitful target group for policy interventions, but that the interventions may vary depending on the type of Medicare beneficiary and the geographic location.