MORE THAN A MEAL
MEDICARE CLAIMS ANALYSES

FINAL REPORT

2017

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REPORT NARRATIVE

BACKGROUND

Home-delivered meals offered by Meals on Wheels (MOW) programs across the country provide critical support to community-dwelling, vulnerable older adults. Previous research has suggested that providing home-delivered meals to homebound older adults results in beneficial nutritional outcomes such as decreased rates of weight gain and increased energy and food security. [1-3] Receipt of home-delivered meals has also been associated with decreases in depression, loneliness, and falls, in addition to decreased rates of institutionalization and hospitalization.[4-7] Despite the mounting evidence that home-delivered meals are associated with improvement in overall health and well-being* among older adults, funding for these programs has not kept pace with the growing demand. This has resulted in millions of fewer meals provided, thousands of seniors going unserved, and waiting lists continuing to grow.[9,10]

PROJECT GOAL

Meals on Wheels America has invested in a body of research to better understand the impact of Meals on Wheels services on overall health and well-being and associated use of high-cost healthcare services. With financial support from the Gary and Mary West Foundation, Meals on Wheels America commissioned investigators at Brown University's School of Public Health to examine the impact of home-delivered meals on fee-for-service (FFS) Medicare beneficiaries' healthcare utilization and costs.

PROJECT OBJECTIVES

To achieve the project goal, the following steps were critical:

- Link MOW client data to Medicare data by using advanced statistical data modeling and matching techniques
- Describe the population of Medicare beneficiaries receiving services from MOW programs
- Describe the relationship between receiving MOW and healthcare utilization and associated costs.

METHODS

Data from 13 MOW programs in California, Georgia, North Carolina, Oklahoma, Rhode Island and Texas were linked with Medicare claims data to identity healthcare service use among 14,019 Medicare fee-for-service beneficiaries who received Meals on Wheels between 2009 and 2014. To do this, data from these programs were provided to investigators at Brown University. Program data included, at a minimum, clients' gender, race, date of birth, start and end dates of service, and their 9-digit zip code. Investigators at Brown University linked these data with the Medicare Master Beneficiary Summary File and Claims Data, obtained through a data use agreement with the Centers for Medicare and Medicaid Services (CMS). With these linked data, investigators examined the Medicare claims records and tracked clients' healthcare utilization prior to and following receipt of Meals on Wheels services. Using propensity scores, investigators identified a control group that matched the Meals on Wheels clients as closely as possible. Matching criteria included geography, gender, Medicare-defined race, age (within 5 years), chronic diseases, and

healthcare service use for the 30, 90, 180 and 365 day periods prior to the date of MOW enrollment.

The Brown team created indicators for healthcare utilization 30, 90, 180 and 365 days before and 30, 90 and 180 days after enrollment in Meals on Wheels for both Meals on Wheels clients and controls. The team examined hospitalizations, emergency department (ED) visits (or observation stays), and nursing home admissions for the time periods specified, and associated costs. Healthcare costs were calculated using reimbursements reported in the Medicare claims records prior to, and following MOW enrollment services over a 30-, 90-, and 180-day period, respectively. Specifically, costs were determined by summing all inpatient hospitalizations, emergency department visits (or observations stays) and reported Medicare Part A Skilled Nursing Facility reimbursements that occurred during the specified time intervals.

Two sets of analyses were conducted. The first compared healthcare utilization and costs for Meals on Wheels clients prior to and following receipt of Meals on Wheels services over a 30-, 90- and 180-day period. The second, describes differences in healthcare utilization and costs between Meals on Wheels clients and a control group of Medicare beneficiaries who did not receive Meals on Wheels services.

(See *Appendix A* for a detailed description of the methodology.)

KEY FINDINGS

1. Meals on Wheels recipients' healthcare utilization rates were significantly lower in the post-enrollment period compared to the same time periods before enrollment. Table 2 presents their rate of inpatient hospitalizations, ED use and nursing home utilization in the year prior to, and the 6 months after, receiving Meals on Wheels services. Specifically:

    - Hospitalization rates declined by 38.9%, 38.0%, and 31.0% in the 30, 90, and 180-day post-enrollment periods compared to similar time periods before enrollment
    - Emergency room utilization rates also significantly declined by 28.2%, 20.7% and 12.7%, respectively.
    - Nursing home use declined by 27.8%, 37.4% and 25.3%, respectively.

2. Table 3 presents the healthcare costs before and after receiving Meals on Wheels services. Meals on Wheels recipients' healthcare costs declined following MOW enrollment as compared to the time periods before enrollment. Specifically:

    - Hospitalization-associated reimbursements decreased by $362, $1,155, and $1,356 on average per person at the 30-, 90-, and 180-day time periods following MOW enrollment.
    - Medicare Skilled Nursing Facility use reimbursements decreased by $244, $652, and $363, over the same period on average per person, respectively.
    - Modest reductions in Emergency department/observation stay reimbursements were also observed over the same period of $22, $43, and $27, on average per person, respectively.

3. Preliminary results, as presented in Tables 4 and 5, suggest that compared to Medicare beneficiaries receiving MOW, matched controls had statistically higher rates of hospitalization, emergency department/observation stays, and nursing home admissions.

(See *Appendix B* for additional findings related to the relationship between MOW use and potentially preventable hospitalizations.)

CONCLUSIONS

Results from this study demonstrate that the proportion of MOW clients utilizing institutional healthcare services in the 30, 90, and 180 days post enrollment in MOW is significantly lower than in the pre-enrollment period. These reductions in healthcare utilization in the post-enrollment period translated into lower healthcare costs, on average, in the 30-, 90- and 180-day periods. It is important to note that these results do not imply a causal relationship between receipt of Meals on Wheels services and decreased utilization. Nevertheless, they are in line with prior research, which has shown that Meals on Wheels recipients attain benefits from the service in terms of reduced falls, decreased loneliness, and a reduction in healthcare utilization.[4-7] In a separate analysis comparing utilization between MOW recipients and the control group, certain measures of healthcare utilization were significantly higher for MOW clients including hospitalizations and ED visits in the 30, 90, and 180 days post-enrollment.

Researchers speculate that there are several plausible explanations for these somewhat incongruous findings that range from a clear pent-up need for short-term services from a highly vulnerable population[14,15] which could level out and result in savings over time[16,17] with continued delivery of Meals on Wheels services; to the possibility that the matching criteria failed to adequately capture differences in those receiving services compared to those not receiving services[18]. Using statistical modeling to match MOW-Medicare beneficiaries and controls in this study may not have fully accounted for important unobservable factors that can influence healthcare utilization, such as depression, educational attainment, availability of social supports, and access to transportation, among others.

These findings add to our existing portfolio of research documenting the value of home-delivered meals to clients' health and well-being. Meals on Wheels America will continue to invest in building our base of knowledge to better understand the relationship between Meals on Wheels services and healthcare utilization.

APPENDIX A – DETAILED METHODOLOGY

DATA

MOW Data. Data were compiled from a sample of 13 MOW sites across the U.S., including providers in the following states: California, Georgia, North Carolina, Oklahoma, Rhode Island, and Texas. Individual MOW programs submitted a list of clients to Meals on Wheels America (MOWA) who were enrolled between January 1, 2010 and December 31, 2013. Data included, at a minimum, information on the clients' gender, race, dates of birth, start and end dates of service, and their 9-digit ZIP codes. Some sites sent additional information such as the client's living arrangement, functional limitations, annual income, and whether or not they received special meals (e.g., chopped, frozen, diabetes-friendly, low-sodium). Data were shared with Brown University where investigators compiled, cleaned, and checked for any out-of-range values (e.g., nonsensical dates of birth or start/end dates of service after the date that data were shared).

Medicare Master Beneficiary Summary File and Claims Data. The 2009-2014 Medicare Master Beneficiary Summary File (MBSF) data and Medicare claims are available to Brown investigators under a data use agreement with the Centers for Medicare and Medicaid Services (CMS). The MBSF includes enrollment information about beneficiaries and each beneficiary's state and county codes, 9-digit ZIP code, date of birth, date of death, gender, race, age, and monthly entitlement and managed care indicators. The MBSF also contains information about health in the Chronic Conditions Segment. This segment includes 27 chronic condition data warehouse (CCW) flags that indicate the presence of treatment for common or chronic conditions using claims-based algorithms as a proxy for evidence of the presence of a condition. In addition, we used data from Medicare Inpatient, Outpatient, Skilled Nursing Facility, Home Health, and Hospice claims between calendar years 2009 and 2014.

Minimum Data Set. The nursing home resident assessment instrument, the Minimum Data Set, was used to identify dates of nursing home entry and exit and to inform the Residential History File (RHF).

Residential History File. The RHF is a per-person chronological data infrastructure created by investigators at Brown University and built with claims and patient assessments; whereby, we are able to identify for every Medicare beneficiary their location of care and what services they received, as well as their Medicare eligibility, on every day of the study period (2009-2014).

DEVELOPING AN ANALYTIC SAMPLE OF MOW CLIENTS

Fifty one thousand, five hundred and ten (51,510) client records were provided to the research team from the 13 sites. To derive our analytic sample from the MOW data, we applied the following inclusion criteria:

1. Clients must have been age 66 years or older at the time that they began receiving MOW in order to match to their Medicare claims. A total of 12,010 clients was excluded due to age restrictions.

2. Clients had to have a service start date after January 1, 2010 due to the availability of Medicare claims data. This resulted in an additional 12,935 clients excluded.

After these exclusions, the final sample of clients eligible for Medicare linkage was 29,593, representing 57% of the initial cohort.

LINKING MOW DATA WITH THE MEDICARE MASTER BENEFICIARY SUMMARY FILE

The cohort of 29,593 MOW clients was merged with the 2009-2014 MBSF. Because the investigators do not have access to unique identifiers to link the MOW enrollees to the MBSF data, we linked the records using deterministic matching based on gender, date of birth, and 9-digit ZIP codes in the MBSF data with the information provided by MOW sites. The remaining unlinked individuals were re-matched by gradually loosening the matching criteria; meaning, we either dropped a digit of ZIP code (going from 9-digits to 8-digits) or the birth day/month. For the purposes of these analyses, we utilized a conservative approach and only included MOW clients that had a unique link (1-to-1) with a Medicare beneficiary that satisfied the gradually relaxed matching criteria. In total, we uniquely matched 25,194 clients out of 29,593 (85.1%). See **Table 1** for a list of 1-to-1 linkages, by site.

LINKING TO THE RESIDENTIAL HISTORY FILE AND FINAL EXCLUSIONS

For the MOW clients with 1-to-1 matches to Medicare beneficiaries, we characterized their health status and healthcare utilization patterns. This task was accomplished by linking the Medicare-matched clients (heretofore referred to as MOW-Medicare) to Brown University's Residential History File (RHF).[11] Of the 25,194 MOW-Medicare clients, 389 did not appear in the MBSF on the date that they began receiving MOW and were excluded from the analyses. In order to carry out our analyses of the impact of the MOW program, it was important that we had baseline health and healthcare utilization information to select a control group with similar characteristics and patterns of the MOW-Medicare sample prior to their enrollment in the MOW program. The need for these baseline utilization measures required us to exclude MOW-Medicare clients who had any Medicare Advantage (MA) coverage in the year before they began receiving MOW (n=10,467) or were enrolled in MA during the month that they began MOW (n=71). For the claims-based outcome measures (inpatient hospital and emergency department use), we excluded any MOW-Medicare clients who were enrolled in MA in the 6-months following initiation of MOW services (n=1918). These exclusions were applied because MA plans are not required to submit claims and as such, we would not be able to observe these beneficiaries' utilization for the full time period before and after MOW enrollment.

Using the RHF data infrastructure, we identified the site of care for FFS MOW-Medicare beneficiaries on the date that they began MOW. Because MOW programs vary in their precision of reported start dates (e.g., some record the start date from the date of referral, others from the date of the initial assessment, and others from the date of first delivery), we did find some clients whose reported MOW start date coincided with a day of inpatient covered services. For these individuals, we assigned their MOW start date as the date that they returned to the community if it was within 30-days from the MOW-reported start date. The remaining individuals who were still in an inpatient setting within 30-days after their MOW start date were excluded from the sample as they were believed to be poor matches or have inaccurate MOW start dates

(n=246). The **final MOW-Medicare cohort was 14,019 patients** who met all inclusion criteria for the outcomes analyses.

IDENTIFYING A CONTROL GROUP

To compare outcomes between the MOW-Medicare and non-MOW recipients, a critical first step was to identify a target control sample that had similar characteristics to MOW-Medicare clients up to the point where MOW clients started receiving meals. For each site, we limited our search for potential control candidates to those residing within the set of 5-digit ZIP codes that particular site serviced in order to ensure the control sample did not receive meals from a MOW program in a different area of the country. Additionally, there is substantial regional variation in health services utilization.[12] By selecting a control group within the same geographic region, we can assume that they were exposed to a similar utilization culture as their MOW-Medicare matches.

Within each site, our goal was to identify potential controls for each MOW participant. The potential matches considered for each MOW-Medicare client were set to have the same gender, Medicare-defined race, and be within the same five-year age block. In addition to matching on demographic variables, we also considered the individual's chronic medical conditions and their healthcare utilization the 12 months before starting MOW. The medical conditions that were considered included Alzheimer's disease, dementia, cancer, coronary artery disease, heart failure, stroke, diabetes, kidney disease, chronic obstructive pulmonary disease (COPD), asthma, and hip/pelvic fracture. The healthcare utilization events we considered were inpatient hospitalization, outpatient hospitalization, nursing home/SNF use, hospice, home health days, and emergency department visits. The numbers of events were examined for the 30, 90, 180, and 365 days prior to receiving services from MOW.

While it is rather straightforward to identify the utilization for MOW-Medicare users in the year before starting the program, it is difficult to define a start date for all of the controls. To circumvent this issue, we created four blocks, corresponding to the four seasons, in each year and calculated the healthcare utilization for the non-MOW recipients based on the start date of each of the seasonal quarters. At each site, the MOW-Medicare clients were matched to control subjects within the year and quarter they started the program. In addition, control subjects were restricted to those who matched exactly to MOW-Medicare clients on the type of utilization events that occurred in the last 90 days. Within each year-quarter block, and utilization event, we extracted a control subject that had the closest estimated propensity score for each of the MOW subjects. The propensity score model included the set of pre-existing medical conditions and the number of utilization events in the past year and an indicator for whether utilization occurred in the past 30 days. After we pooled all the matching control subjects from the blocks together, we compared the distribution of comorbidities and utilization events. The goal of the propensity score matching was to identify a control sample that did not receive MOW, but had very similar medical conditions and past health care utilization patterns in the previous year.

CALCULATING HEALTHCARE UTILIZATION AND COSTS

To identify healthcare utilization, we used the starting point of MOW enrollment for the MOW-Medicare clients and their matched controls. With the RHF, we identified hospitalizations, ED visits (or observation stays), and nursing home admissions that took place in the year prior and in the 6 months after enrollment.

We created indicators for utilization 30, 90, 180, and 365 days before and 30, 90, and 180 days after the MOW enrollment date for MOW-Medicare clients and controls. Inpatient hospitalization and ED use flags were created only among the sample who were FFS in the full year before and FFS through each of the follow-up time points. We identified nursing home utilization, death, and switch to MA, for the full analytic sample of MOW-Medicare clients and their controls.

To calculate costs, we summed the hospitalization, ED visit (or observation stay), and Medicare Part A Skilled Nursing Facility (SNF) adjusted reimbursements reported in the claims data during each of the time intervals. Reimbursements are adjusted for annual inflation rates of healthcare expenditures. For episodes that covered two time periods, we prorated these costs. For example, if a MOW-Medicare client was hospitalized on day 28 after receiving MOW and was in the hospital for 5 days, we would only attribute the daily average reimbursement for 2 days to the 30-day inpatient hospitalization costs, while the full five-day reimbursement would be included in the 90 and 180-day inpatient hospitalization costs.

TESTING FOR DIFFERENCES IN HEALTHCARE UTILIZATION AND COSTS PRE- AND POST-MOW ENROLLMENT FOR MOW-MEDICARE CLIENTS

We assessed differences in the proportion of clients having an event within each of the time periods before and after MOW enrollment using the McNemar's test. Mean cost differences between the before and after MOW enrollment periods were assessed with paired t-tests.

TESTING FOR DIFFERENCES IN MORTALITY AND HEALTHCARE UTILIZATION PRE- AND POST-MOW ENROLLMENT BETWEEN MOW-MEDICARE CLIENTS AND MATCHED CONTROLS

While the MOW-Medicare sample and their matched control sample were very similar in terms of pre-existing medical conditions and prior utilization history on average, there were still some individual-level differences for each MOW-Medicare client and their respective matched control. In order to reduce individual-level heterogeneity between the two samples in the outcomes analysis, we used the control sample to estimate the outcomes for the MOW-Medicare beneficiaries had they not received services from MOW. This was done by fitting a logistic regression model within each site to carry out multiple imputations of the unobserved outcomes for MOW recipients had they not received MOW. Multiple imputation[13] allows us to account for variability in the parameter estimates and for possible errors of the prediction models. We first examined differences in mortality. Bayesian logistic regression models were fit to predict the death status of the control sample for each site. Separate models were created for each site to examine 30-day mortality, 90-day mortality conditional on being alive after 30 days, and 180-day mortality conditional on being alive after 90 days. Each model contained the pre-existing medical conditions of the control individuals, their 30-day, 60-90 day, and 90-360-day prior utilization, and a selection of statistically significant second order interactions for that given site. Using the posterior samples of the parameters, we imputed the death status of MOW-Medicare beneficiaries had they not received MOW. We estimated the predicted difference in mortality rate and its corresponding standard error, using 100 imputed mortality values for individuals had they not received MOW to the observed death status of the MOW-Medicare beneficiaries. The

estimated mortality difference is the average matched-pairs proportion difference across the 100 imputed samples. The confidence interval is constructed using Rubin's rules[13] for multiple imputation.

We examined the average number of utilization events 30, 90, and 180 days after starting MOW using the control sample and MOW-Medicare beneficiaries that were alive and fee-for-service during each time period. We excluded individuals who had died or switched to Medicare Advantage coverage during each of the time points to ensure that all individuals had an equal amount of time to experience utilization events after the MOW start date. The numbers of inpatient acute, ED/observation, and nursing home events were calculated for each individual in each of the 13 sites. We also identified if an individual had any utilization in each of the three time periods. We weighted site estimates proportional to their relative size when estimating the combined utilization. We calculated the utilization differences as a weighted difference in means and p-values are obtained using weighted t-tests.

Table 1. MOW Clients Identified in Medicare Master Beneficiary Summary File, by Site

Site	N considered	N Linked	% Linked	N of 1:1 Linkages	% of Linkages that were 1:1
1	449	386	86.0%	361	93.5%
2	209	173	82.8%	143	82.7%
3	572	517	90.4%	502	97.1%
4	405	377	93.1%	365	96.8%
5	4693	4057	86.4%	3861	95.2%
6	138	119	86.2%	119	100.0%
7	3916	3639	92.9%	3515	96.6%
8	4956	4403	88.8%	4262	96.8%
9	2978	2652	89.1%	2539	95.7%
10	1523	1420	93.2%	1310	92.3%
11	4861	4429	91.1%	4314	97.4%
12	3970	3644	91.8%	3139	86.1%
13	923	850	92.1%	764	89.9%
Total	**29,593**	**26,666**	**90.1%**	**25,194**	**94.5%**

Table 2. Pre and Post Healthcare Utilization for the MOW-Medicare Sample at 30, 90 and 180 Days

Hospitalizations				
	Pre-MOW (%)	**Post-MOW (%)**	**% Reduction**	**p-Value**
30 Days[1]	11.07	6.76	38.93	<.0001
90 Days[2]	23.22	14.40	37.98	<.0001
180 Days[3]	30.93	21.48	30.55	<.0001
Emergency Department				
	Pre-MOW (%)	**Post-MOW (%)**	**% Reduction**	**p-Value**
30 Days[1]	6.52	4.68	28.22	<.0001
90 Days[2]	14.70	11.66	20.68	<.0001
180 Days[3]	21.58	18.83	12.74	<.0001
Nursing Home				
	Pre-MOW (%)	**Post-MOW (%)**	**% Reduction**	**p-Value**
30 Days[4]	3.13	2.26	27.80	<.0001
90 Days[5]	9.65	6.04	37.41	<.0001
180 Days[6]	12.83	9.58	25.33	<.0001

Switch to MA (%)[7]	
30 Days	1.75
90 Days	6.61
180 Days	14.01
Death (%)[7]	
30 Days	1.60
90 Days	4.83
180 Days	8.65

Note. [1]= Out of 13,604 observations; [2]= Out of 12,586 observations; [3]= Out of 11,184 observations; [4]=Out of 13,847 observations; [5]=Out of 13,484 observations; [6]=Out of 13,020 observations; [7]=Out of 14,019 observations; *p* values obtained with McNemar's Test for significant differences in the pre-MOW and post-MOW time periods

Table 3. Pre and Post Healthcare Costs for the MOW-Medicare Sample at 30, 90 and 180 Days

	Days Pre- and Post-MOW	Mean Reimbursement Pre-MOW ($)	Mean Reimbursement Post-MOW ($)	Mean Difference in Reimbursement Pre and Post-MOW	T-statistic	p-value
Inpatient	30 Days[1]	943.98	582.47	361.50	8.67	<0.0001
	90 Days[2]	2600.47	1445.63	1154.80	14.91	<0.0001
	180 Days[3]	3835.60	2480.03	1355.60	12.58	<0.0001
Emergency Department / Observation Stay	30 Days[1]	57.64	35.28	22.36	5.52	<0.0001
	90 Days[2]	149.42	106.86	42.57	5.60	<0.0001
	180 Days[3]	230.62	203.16	27.46	2.72	0.0065
Medicare Skilled Nursing Facility	30 Days[1]	446.34	201.99	244.30	9.80	<0.0001
	90 Days[2]	1323.48	671.63	651.80	11.43	<0.0001
	180 Days[3]	1599.62	1236.42	363.20	5.06	<0.0001

Note. [1]= Out of 13,604 observations; [2]= Out of 12,586 observations; [3]= Out of 11,184 observations; P-values obtained with Paired T-Test

Table 4. Unadjusted Differences in Weighted Utilization Events Between MOW Clients and Controls

30 Days after Starting MOW					
	Control Mean (n=12,259)	**MOW mean (n=12,012)**	**Difference**	**SE**	**p-value**
Inpatient Acute	0.0487	0.0916	-0.0428	0.0038	<.0001
ED/Observation	0.0414	0.0613	-0.0199	0.0034	<.0001
Nursing Home	0.0301	0.0313	-0.0013	0.0028	0.6590
90 Days after Starting MOW					
	Control Mean (n=11,237)	**MOW mean (n=11,080)**	**Difference**	**SE**	**p-value**
Inpatient Acute	0.1370	0.1879	-0.0509	0.0066	<.0001
ED/Observation	0.1210	0.1499	-0.0289	0.0066	<.0001
Nursing Home	0.0877	0.0959	-0.0081	0.0066	0.2160
180 Days after Starting MOW					
	Control Mean (n=10,008)	**MOW mean (n=9766)**	**Difference**	**SE**	**p-value**
Inpatient Acute	0.2411	0.3241	-0.0830	0.0099	<.0001
ED/Observation	0.2277	0.2901	-0.0623	0.0106	<.0001
Nursing Home	0.1581	0.1838	-0.0257	0.0103	<.0001

Table 5. Unadjusted Differences in Weighted Proportion with Any Utilization Between MOW Clients and Controls

30 Days after Starting MOW			
	Control Proportion (n=12,259)	**MOW Proportion (n=12,012)**	**p-value**
Inpatient Acute	0.0424	0.0766	<.0001
ED/Observation	0.0377	0.0487	<.0001
Nursing Home	0.0227	0.0238	0.5652
90 Days after Starting MOW			
	Control Proportion (n=11,237)	**MOW Proportion (n=11,080)**	**p-value**
Inpatient Acute	0.1088	0.1369	<.0001
ED/Observation	0.0917	0.1083	<.0001
Nursing Home	0.0482	0.0576	0.0016
180 Days after Starting MOW			
	Control Proportion (n=10,008)	**MOW Proportion (n=9766)**	**p-value**
Inpatient Acute	0.1690	0.2122	<.0001
ED/Observation	0.1545	0.1841	<.0001
Nursing Home	0.07657	0.0947	<.0001

APPENDIX B – POTENTIALLY PREVENTABLE HOSPITALIZATIONS ADDENDUM

To identify potentially preventable hospitalizations, we used Agency for Healthcare Research and Quality (AHRQ) Prevention Quality Indicators (PQI), Software Documentation Version 4.1 for SAS and Medicare inpatient claims. PQIs include potentially avoidable hospitalizations for ambulatory care sensitive conditions. These indicators identify hospital admissions that evidence suggests could have been avoided, at least in part, through better access to high-quality outpatient care. The adult PQIs include: 1) Diabetes short-term complication, 2) Perforated appendix, 3) Diabetes long-term complication, 4) Chronic obstructive pulmonary disease, 5) Hypertension, 6) Congestive heart failure, 7) Dehydration, 8) Bacterial pneumonia, 9) Urinary tract infection, 10) Angina without procedure, 11) Uncontrolled diabetes, 12) Adult asthma, and 13) Lower-extremity amputation among patients with diabetes.

Results suggest that MOW-Medicare participants who remained FFS and alive for the month after enrolling in MOW had a statistically significant lower likelihood of a potentially preventable hospitalization in the 30 days after MOW enrollment compared to the likelihood of potentially preventable hospitalizations 30-days prior (See **Table 6**). This trend continued through 90 days (26.41% relative reduction) and 180 days (20.76 % relative reduction to the 180 days prior to enrollment).

Table 6. Weighted Proportion of MOW Recipients with a Potentially Preventable Hospitalization Before and After Receiving MOW

	Days pre and post-MOW	Sample Size	Average Proportion w/PP Hospitalizations Pre-MOW (%)	Average Proportion w/ PP Hospitalizations Post-MOW (%)	% Reduction	p-value
Proportion of Potentially Preventable Hospitalizations	30 days	12,012	2.19	1.95	10.96	<.0001
	90 days	11,080	6.02	4.43	26.41	<.0001
	180 days	9766	9.68	7.67	20.76	<.0001

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Meals on Wheels America is the oldest and largest national organization supporting the more than 5,000 community-based programs across the country that are dedicated to addressing senior isolation and hunger. This network exists in virtually every community in America and, along with more than two million staff and volunteers, delivers the nutritious meals, friendly visits and safety checks that enable America's seniors to live nourished lives with independence and dignity. By providing funding, leadership, education, research and advocacy support, Meals on Wheels America empowers its local member programs to strengthen their communities, one senior at a time. For more information, or to find a Meals on Wheels provider near you, visit www.mealsonwheelsamerica.org.

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The Gary and Mary West Foundation is a private, 501(c)(3) non-operating foundation solely funded by Gary and Mary West and is dedicated to helping make successful aging a reality for America's seniors. Working with grantees such as the Gary and Mary West Health Institute, Gary and Mary West Health Policy Center and other senior-focused national and community-based organizations, the Foundation's outcomes-based philanthropy supports initiatives to advance home- and community-based healthcare delivery, services and supports that preserve and protect seniors' dignity, quality of life and independence. The San Diego-based Foundation is celebrating its 10-year anniversary in 2016 and accepts grant proposals by invitation only. Learn more at gmwf.org, and follow us @GMWFoundation.

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Through research, education, and public service, the Brown University School of Public Health strives to improve the health of individuals as well as populations. Working within all of Brown University, and the wider community, students benefit from substantial opportunities to gain and apply knowledge, while faculty members put their findings into practice to impact local, state, and national policy.