

## REPORT

# Positive Outcomes for High-Need, High-Cost Beneficiaries in Medicare Advantage Compared to Traditional Fee-For-Service Medicare

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Data Analysis by Avalere Health

**BETTER MEDICARE**  
ALLIANCE

**Center for Innovation**  
*in Medicare Advantage*



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## **Acknowledgments**

Better Medicare Alliance's Center for Innovation in Medicare Advantage commissioned Avalere Health to conduct an independent analysis of quality, utilization and cost outcomes for the overall Medicare population and the high-need, high-cost population. We would like to especially recognize the expertise of Christie Teigland, PhD; Zulkarnain Pulungan, PhD; and Iman Mohammadi, PhD in preparing the analysis.

# EXECUTIVE SUMMARY

Medicare beneficiaries who have high needs for medical care and experience high costs of care are a vulnerable population. Research shows these beneficiaries have greater need for management and coordination of their care due to multiple chronic conditions, higher rates of disability, and behavioral and social risk factors for poor health.<sup>1</sup>

Medicare Advantage has distinct features, specifically, full capitation, quality of care incentives, and flexibility to design benefit packages that encourage a focus on preventive services and care management programs with the aim of increasing efficiency and improving health outcomes. Over 24 million beneficiaries are enrolled in Medicare Advantage, including the elderly and those who are eligible for Medicare due to disability. The Congressional Budget Office forecasts 47 percent of all Medicare enrollees will be Medicare Advantage beneficiaries by 2029.<sup>2</sup>

Better Medicare Alliance's (BMA) Center for Innovation in Medicare Advantage sought to examine whether integrated care and care management in Medicare Advantage resulted in better outcomes for beneficiaries most at risk of poor outcomes – those who are high-need, high-cost patients. BMA's Center for Innovation in Medicare Advantage commissioned an independent analysis from Avalere Health to better understand a range of outcomes for high-need, high-cost beneficiaries in Medicare Advantage compared to those in Traditional Fee-For-Service (FFS) Medicare. Avalere Health also looked at the same outcomes for the overall matched populations in Medicare Advantage and Traditional FFS Medicare.

This study applied a validated, peer-reviewed algorithm for identifying the high-need, high-cost beneficiaries in Medicare Advantage and Traditional FFS Medicare.<sup>3</sup> It also used a technique known as “propensity score matching” to control for beneficiary-level characteristics (including demographic, clinical, and socioeconomic factors) to assure comparable sample populations of Medicare Advantage and Traditional FFS Medicare beneficiaries and produce unbiased results. To our knowledge, this is the first published application of this technique for high-need, high-cost beneficiaries in Medicare Advantage and Traditional FFS Medicare. High-need, high-cost beneficiaries include individuals under age 65 who are disabled, the frail elderly, and those with major complex chronic conditions.

Major findings for the high-need, high-cost beneficiary populations include:

1. Better outcomes in Medicare Advantage than Traditional FFS Medicare for all study populations on 17 of 22 clinical quality of care measures, such as:
  - Rates of pneumonia vaccination that are 50 to 52 percent higher in Medicare Advantage.
  - Rates of eye exams for diabetics that are 14 to 56 percent higher in Medicare Advantage.
  - Rates of depression screenings that are 18 to 27 percent higher in Medicare Advantage.
2. Higher rates of physician office visits within 14 days of a hospital discharge for all high-need, high-cost populations, including nearly three-quarters (74 percent) of frail elderly beneficiaries in Medicare Advantage compared to 52 percent of frail elderly beneficiaries in Traditional FFS Medicare.
3. Higher rates of outpatient visits in Medicare Advantage compared to Traditional

FFS Medicare, including a difference of 66 percent for frail elderly beneficiaries and a difference of 46 percent for beneficiaries under age 65 who are disabled as compared to Traditional FFS Medicare.

4. Lower rates of avoidable hospitalizations for acute conditions for all high-need, high-cost populations in Medicare Advantage compared to Traditional FFS Medicare, such as:
  - 57 percent lower rate of avoidable acute hospitalizations for Medicare Advantage beneficiaries with major complex chronic conditions and a 45 percent lower rate for frail elderly Medicare Advantage beneficiaries.
  - 12 percent lower rate of 30-day readmissions for Medicare Advantage beneficiaries with major complex chronic conditions.
5. Lower costs of care for all high-need, high-cost populations in Medicare Advantage relative to Traditional FFS Medicare, such as:
  - Inpatient hospital costs that were 9 to 23 percent lower.
  - Part D drug costs that were 38 to 44 percent lower.
  - Combined pharmacy and medical care cost that were 8 to 18 percent lower.
6. Higher costs of care for physician services and tests in the primary care setting for all high-need, high-cost beneficiary populations in Medicare Advantage compared to Traditional FFS Medicare, ranging from 28 to 41 percent higher.

The study found better outcomes for the high-need, high-cost beneficiaries in Medicare Advantage as compared to the same populations of beneficiaries in Traditional FFS Medicare. Similar positive results for quality of care, utilization of care, and costs of care were found for the overall matched Medicare Advantage population as compared to Traditional FFS Medicare. The findings suggest that Medicare Advantage care management programs and interventions help achieve higher quality of care, as well as greater utilization of physician office and outpatient services, and lower cost of care for vulnerable beneficiaries compared to more fragmented care practices in Traditional FFS Medicare. The hallmark features of Medicare Advantage — such as risk-adjusted capitated payment, strong value-based performance incentives, and flexibility in benefit design — together enable plans to offer care management interventions that help meet the complex care needs of vulnerable beneficiaries in ways that achieve positive health outcomes.

# BACKGROUND

Medicare beneficiaries who have high needs for medical care and experience high costs of care are a vulnerable population. Research shows these beneficiaries have multiple chronic conditions, higher rates of disability, and behavioral and social risk factors for poor health.<sup>4</sup> As a result, they have greater need for integrated care and care management programs that enable them to maintain or improve their health.

Medicare beneficiaries have the option to receive their Medicare benefits through private health plans as an alternative to the federally administered Traditional FFS Medicare program.<sup>5</sup> Medicare Advantage plans take full risk for the health expenditures of all their enrollees and are held accountable for performance on quality measures defined by the Centers for Medicare and Medicaid Services (CMS). Health plans can earn a five percent Quality Bonus Payment for high-quality care delivered to their beneficiary populations.

In addition, Medicare Advantage plans have flexibility to integrate Medicare covered services into benefit packages and supplement the core benefit package with lower cost sharing and additional benefits if their premiums fall below the benchmarks. These features of Medicare Advantage, as compared to Traditional FFS Medicare, encourage a focus on preventive services and care management programs with the aim of increasing efficiency and improving health outcomes.

Enrollment in Medicare Advantage, which consists primarily of health insurance plans organized as health maintenance organizations (HMOs) and preferred provider organizations (PPOs), has grown steadily relative to Traditional FFS Medicare, increasing over 30 percent since 2017.<sup>6</sup> There are now over 24 million beneficiaries enrolled in Medicare Advantage, 21.6 million of whom are enrolled in Medicare Advantage plans that integrate Medicare's inpatient and outpatient services with prescription drug benefits. Medicare Advantage enrollment includes beneficiaries over 65 years old and those who are eligible for Medicare due to disability. The Congressional Budget Office forecasts 47 percent of all Medicare enrollees to be Medicare Advantage beneficiaries by 2029.<sup>7</sup>

BMA's Center for Innovation in Medicare Advantage sought to examine whether integrated care and care management in Medicare Advantage resulted in better outcomes for beneficiaries most at risk of poor outcomes – those who are high-need, high-cost patients. BMA's Center for Innovation in Medicare Advantage commissioned an independent analysis from Avalere Health to better understand a range of outcomes for high-need, high cost beneficiaries in Medicare Advantage compared to Traditional FFS Medicare. The measures examined quality of care, utilization of health care services, and total cost of care. This research builds on recent independent studies analyzing Medicare Advantage and outcomes of care for vulnerable populations, supported by BMA and other research entities, such as the Commonwealth Fund.<sup>8</sup>

# DATA AND METHODS

This study used data from a large national sample of Medicare Advantage encounter data and a complete sample of Medicare Parts A and B claims data and Part D prescription drug event data from 2015 to 2017. The study populations included 1,478,685 Medicare Advantage beneficiaries and 7,983,070 Traditional FFS Medicare beneficiaries.

Beneficiaries in both study samples were assigned to one of six clinical populations in order to identify the high-need, high-cost populations (Exhibit 1). The six populations were previously identified and validated in published peer-reviewed analyses of the Traditional FFS Medicare population as distinct beneficiary categories in terms of characteristics level of clinical need.<sup>9</sup> They are applied in this study to both Medicare Advantage and Traditional FFS Medicare in order to compare outcomes for these vulnerable populations within Medicare. The beneficiary groups are:

- Major complex chronic (age ≥ 65 and 2 or more complex conditions — defined as 9 of the 29 chronic conditions — or 6 or more non-complex conditions);
- Frail elderly (age ≥ 65 and 2 or more frailty conditions);<sup>10</sup>
- Under age 65 who are disabled (age <65 with original reason for entitlement code (OREC) disability and/or End-Stage Renal Disease (ESRD));
- Minor complex chronic (age ≥65 and at least 1 complex condition and fewer than 6 non-complex conditions);
- Simple chronic (age ≥ 65 and 1-5 non-complex conditions); and
- Relatively healthy (all other beneficiaries).

Exhibit 1: Distribution of Beneficiaries by Clinical Segment (Prior to Matching)

Clinical Segment	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff
<i>Number of beneficiaries</i>	1,478,685	7,983,070	
Major Complex Chronic	19.0	19.8	-4%
Frail Elderly	7.8	10.9	-28%
Under Age 65 Disabled	20.3	17.5	16%
Minor Complex Chronic	30.9	30.4	2%
Simple Chronic	16.6	17.4	-5%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding.

This report focuses on the first three clinical populations as they represent patients who are the most medically complex and would potentially benefit to the greatest extent from enhanced care management and care coordination. The cohorts comprising these three clinical populations are referred to as the “high-need, high-cost” population throughout this paper.

To assess outcomes, this study compared performance on a discrete set of outcome measures. These measures were chosen as relevant indicators of the quality of care, utilization of care, and cost of care impacts of evidence-based care management practices for high-need, high-cost patients. See Appendix A for the full list of measures included in the study.

To minimize bias in comparing outcomes for Medicare Advantage and Traditional FFS Medicare, this study used a technique known as “propensity score matching.” This technique matches each beneficiary in the Medicare Advantage study sample to a beneficiary in Traditional FFS Medicare with similar demographic, clinical, and socioeconomic characteristics. Patients who failed to match were excluded from the analysis.

This matching process allowed us to control for individual patient characteristics that might determine or contribute to the outcomes of interest, such as age or chronic conditions, so we are comparing outcomes in similar populations of Medicare Advantage and Traditional FFS Medicare beneficiaries. Focusing on matched subsets allows for a direct, unbiased comparison of beneficiary populations with respect to health care utilization, cost, and quality measures. The matching resulted in a study population of 1,262,180 in both Medicare Advantage and Traditional FFS Medicare. See Appendix B for a detailed description of the study design, data sources, cohort selection, and data analysis.



# STUDY POPULATION

Before propensity score matching, characteristics of the overall study populations were analyzed (Exhibit 2). Medicare Advantage and Traditional FFS Medicare sampled populations were similar in age (70.2 in Medicare Advantage and 71.1 in Traditional FFS Medicare) and gender distribution. However, Medicare Advantage beneficiaries were twice as likely to belong to a racial or ethnic minority group (34 percent compared to 16 percent) and far more likely to live in an urban neighborhood (80 percent compared to 66 percent). Medicare Advantage beneficiaries also were more likely to be fully dual eligible for Medicare and Medicaid (29 percent compared to 21 percent) and disabled (31 percent compared to 27 percent).

Exhibit 2: Demographic Characteristics (Prior to Matching)

Demographic Characteristics	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff
<i>Number of beneficiaries</i>	1,478,685	7,983,070	
Average Age	70.2	71.1	-1%
Female	57.3	57.8	-1%
Under Age 65	20.0	18.0	11%
Identifies as a Racial / Ethnic Minority	33.7	16.0	111%
Lives in an Urban Area	80.4	65.6	23%
Disability / ESRD as Original Reason for Medicare Entitlement	30.8	26.7	16%
Non-Dual Eligible	60.4	71.6	-16%
Partial-Dual Eligible	11.1	7.0	59%
Full-Dual Eligible	28.5	21.4	33%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

The Medicare Advantage population also has more beneficiaries with social risk factors as compared to Traditional FFS Medicare (Exhibit 3). For example, 19 percent of Medicare Advantage beneficiaries live in neighborhoods where the median income is below \$30,000 per year compared to 10 percent of Traditional FFS Medicare, and 1 in 4 Medicare Advantage beneficiaries live alone compared to 1 in 10 beneficiaries in Traditional FFS Medicare.

Exhibit 3: Socio-Economic Characteristics at the Near-Neighborhood Level (Prior to Matching)

Socio-Economic Characteristics	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff
<i>Number of beneficiaries</i>	1,478,685	7,983,070	
Median Household Income of Less than \$30,000	19.0	9.6	98%
Where 68% or More Live Alone	26.2	11.2	134%
With an Unemployment Rate of 8% or more	47.1	33.8	39%
Did not Complete High School	15.1	12.2	24%
With 30% or more of the Households Below the Federal Poverty Level	12.4	5.0	148%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

Social Determinants of Health (SDOH) data was assigned at 9 digit ZIP level which represents 30 million neighborhoods with an average of 5 households. We linked this data to beneficiaries using their address to develop neighborhood level proxies for the social risk factors evaluated.

# FINDINGS FOR HIGH-NEED, HIGH-COST BENEFICIARIES

Study populations were segmented into the six clinical populations described above to identify the high-need, high-cost beneficiaries (Exhibit 1). Propensity score matching was applied to control for differences between the Medicare Advantage and Traditional FFS Medicare populations and make unbiased comparison on measures of clinical quality of care, utilization, and costs. Comparative findings across the three high-need, high-cost populations of matched beneficiaries are presented below by category of outcome: 1) Health Care Quality, 2) Health Care Utilization, and 3) Cost of Care.

## HEALTH CARE QUALITY

Overall, Medicare Advantage performed better than Traditional FFS Medicare for all high-need, high-cost beneficiary populations on 17 of 22 clinical quality of care measures (77 percent of measures). On several preventive care measures, the percent of Medicare Advantage beneficiaries receiving the screening or test were substantially higher—up to 50 percent—than in Traditional FFS Medicare. Medicare Advantage had similar results for high-need, high-cost patients relative to Traditional FFS Medicare on four quality of care measures (18 percent of measures), and Medicare Advantage performance was slightly below Traditional FFS Medicare on one quality of care measure for all high-need, high-cost beneficiary populations.

The comparative performance is presented below in three categories:

- Preventive Screening and Therapy Services;
- Inpatient and Outpatient Services; and
- Management of Prescription Drugs.

### Preventive Screening and Therapy Services

High-need, high-cost beneficiaries in Medicare Advantage had substantially higher rates of preventive screenings and services compared to similar populations in Traditional FFS Medicare. For example, 74 percent of beneficiaries with major complex chronic conditions and 71 percent of frail elderly in Medicare Advantage received a pneumonia vaccine, while 49 percent and 48 percent of similar beneficiaries, respectively, received the vaccine in Traditional FFS Medicare—a 50 to 52 percent higher rate of vaccination in Medicare Advantage. In the overall Medicare populations, Medicare Advantage beneficiaries received a pneumonia vaccination 49 percent more often, and received an influenza vaccination 11 percent more often compared to beneficiaries in Traditional FFS Medicare. (Exhibit 4).

Further, all Medicare Advantage high-need, high-cost populations were screened for depression and received a follow-up plan at higher rates (differences of 18 to 27 percent more) than similar beneficiaries in Traditional FFS Medicare. All high-need, high-cost beneficiary populations also initiated alcohol or other drug abuse or dependence treatment at higher rates than similar populations in Traditional FFS Medicare—with differences ranging from 12 to 46 percent higher in Medicare Advantage compared to Traditional FFS Medicare.

In the overall Medicare populations, Medicare Advantage beneficiaries were 10 percent more likely to receive screening for prostate cancer and 7 percent more likely to have a mammogram compared to Traditional FFS Medicare beneficiaries.

Exhibit 4: Rates of Preventive Screening and Therapy by Matched High-Need, High-Cost Populations

Outcome Measure	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff
<i>Number of beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Preventative Screening												
Received Pneumonia Vaccine	Not Applied			71.0	47.5	50%	74.2	48.7	52%	72.8	49.0	49%
Received Influenza Vaccine	62.8	55.1	14%	73.6	70.5	4%	76.8	68.9	11%	73.0	65.5	11%
Received Breast Cancer Screening	65.9	57.7	7%	63.2	57.7	14%	73.7	69.2	5%	70.3	65.5	7%
Received Prostate Cancer Screening	Not Applied			20.1	18.3	10%	25.9	25.1	3%	24.5	22.2	10%
Received Eye Exam (Diabetic Patients)	79.0	50.6	56%	80.5	66.5	21%	81.2	71.3	14%	78.3	62.0	26%
Received Falls Risk Assessment	Not Applied			99.1	93.1	6%	99.4	90.5	10%	99.2	91.3	9%
Received Depression Screening and Follow-up Plan	85.6	67.2	27%	84.9	71.9	18%	85.7	72.1	19%	86.3	72.5	19%
Received Colonoscopy	53.5	53.8	-1%	57.0	60.1	-5%	64.8	66.4	-2%	56.9	57.3	-1%
Received Cholesterol Screening	72.8	71.0	3%	70.3	71.1	-1%	78.8	82.2	-4%	75.0	77.0	-3%
HbA1C Testing (Diabetic Patients)	89.9	85.1	6%	89.5	85.6	4%	93.6	91.5	2%	91.4	88.3	4%
Therapy												
Poor Control of HbA1C (Diabetic Patients)	19.5	19.5	0%	19.0	19.2	-1%	15.0	13.1	15%	16.7	15.8	5%
Received Statin Therapy (Patients with Heart Disease Only)	63.4	70.5	-10%	67.5	73.2	-8%	73.5	77.3	-5%	67.4	74.3	-9%
Dispensed Disease-Modifying Antirheumatic Drugs	73.2	75.2	-3%	70.9	73.1	-3%	75.0	76.5	-2%	74.9	77.6	-3%
Initiation of Alcohol and Other Substance Abuse or Dependence Treatment	62.3	52.7	18%	51.6	45.9	12%	74.5	50.9	46%	67.1	51.9	29%
Engagement of Alcohol and Other Drug Abuse or Dependence Treatment	7.6	7.2	6%	6.4	1.6	312%	4.6	5.1	-10%	6.2	6.4	-3%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®) Note: Calculations may differ due to rounding

As shown in the matched Medicare populations, the high-need, high-cost beneficiaries in Medicare Advantage experienced similar rates of preventive care to their counterparts in Traditional FFS Medicare on three measures (Received Colonoscopy, Received Cholesterol Screening and Dispensed Disease-Modifying Antirheumatic Drug Therapy). Performance of all the high-need, high-cost populations was mixed on one measure (Engagement of Alcohol and Other Drug Abuse or Dependent Treatment) where the rate of preventive care for under age 65 disabled beneficiaries was 6 percent higher in Medicare Advantage and the rate for frail elderly beneficiaries was 312 percent more in Medicare Advantage. The rate was 10 percent lower, however, for major complex chronic beneficiaries in Medicare Advantage relative to Traditional FFS Medicare. All high-need, high-cost beneficiary populations in Medicare Advantage had rates of preventive care that were 6 to 10 percent lower compared to Traditional FFS Medicare on one measure (Received Statin Therapy for Patients with Cardiovascular Disease).

### Hospitalizations and Follow-Up Care

High need, high-cost Medicare Advantage beneficiaries had substantially lower rates of avoidable hospitalizations and readmissions compared to similar beneficiaries in Traditional FFS Medicare for all measures in this study. Specifically, in Medicare Advantage the average rate of avoidable hospitalization for acute and chronic conditions among the frail elderly were 45 percent and 31 percent below Traditional FFS Medicare respectively and the average rate of avoidable hospitalizations for acute and chronic conditions among beneficiaries with major complex chronic conditions was 57 percent and 45 percent below Traditional FFS Medicare (Exhibit 5). Medicare Advantage high-need, high-cost beneficiaries also experienced positive outcomes with respect to physician visits within 14 days of discharge from the hospital: 68 to 74 percent had a physician visit compared to 52 to 67 percent in Traditional FFS Medicare. There were similar findings in the overall matched Medicare population. The rate of avoidable hospitalizations due to potentially preventable complications was 43 percent lower in Medicare Advantage compared to Traditional FFS Medicare, and 21 percent more Medicare Advantage beneficiaries had a physician visit within 14 days post-discharge compared to Traditional FFS Medicare.

Exhibit 5: Rates of Avoidable Hospitalization and Readmission by Matched High-Need, High-Cost Populations

Measure	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff
<i>Number of beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Avoidable Hospitalizations - Acute Conditions	Not Applied			4.5	8.1	-45%	2.0	4.7	-57%	2.3	4.7	-51%
Avoidable Hospitalizations - Chronic Conditions	Not Applied			19.9	28.7	-31%	10.4	19.0	-45%	12.1	20.0	-40%
Avoidable Hospitalizations - Any Condition	Not Applied			23.2	35.9	-35%	11.9	22.9	-48%	13.3	23.2	-43%
All-Cause Readmissions	11.8	12.0	-2%	12.3	12.6	-3%	7.7	8.8	-12%	10.4	11.0	-5%
Physician Office Visit Within 14 Days of Discharge	68.4	54.2	26%	73.9	51.9	42%	69.8	66.7	5%	69.9	57.6	21%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

## Management of Prescription Drugs

High need, high-cost Medicare Advantage beneficiaries were concurrently prescribed opioids and benzodiazepines less often than similar beneficiaries in Traditional FFS Medicare. Specifically, Medicare Advantage rates were between 26 and 32 percent lower than similar beneficiaries in Traditional FFS Medicare. Rates of prescribing high-risk medications for frail elderly and beneficiaries with complex chronic conditions were 7 to 16 percent lower as compared to similar beneficiaries in Traditional FFS Medicare. These results were similar for the overall matched Medicare populations as well (Exhibit 6).

Exhibit 6: Management of Prescription Drugs by High-Need, High-Cost Populations

Measure	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff
<i>Number of Beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Concurrently Prescribed Opioids and Benzodiazepines	18.9	27.5	-32%	11.4	15.4	-26%	12.4	16.8	-27%	14.7	20.9	-30%
Prescribed High-Risk Medication	Not Applied			17.3	18.7	-7%	14.5	17.2	-16%	10.8	12.8	-16%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

## HEALTH CARE UTILIZATION AND COSTS OF CARE

This study compared performance on several measures of utilization and cost of care. These measures were chosen because they represent major areas of health care use, specifically, inpatient and outpatient care, primary care and specialty care. Utilization and cost of care measures are also indicators of the potential impact of care management practices for high-need, high-cost beneficiaries.

Health care utilization, pharmacy costs, and medical care costs were calculated on a per beneficiary, per year basis across a variety of services and settings. For the purpose of this analysis, medical costs for Medicare Advantage beneficiaries were based on Traditional FFS Medicare allowed amounts. Standardizing Medicare Advantage costs to Traditional FFS Medicare pricing removes differences related to Medicare Advantage negotiated rates. For pharmacy costs, standardized pricing was applied at the national drug code level for each pharmacy claim using a standard discount from the average wholesale price for Medicare Advantage. For Traditional FFS Medicare, the prescription drug allowed amount was used to calculate drug cost. This allows for a straightforward analysis of relative expenditures excluding price variations.<sup>11</sup>

## Inpatient and Outpatient Utilization and Costs

High need, high-cost Medicare Advantage beneficiaries had lower inpatient hospital utilization rates and higher outpatient utilization rates compared to Traditional FFS Medicare (Exhibit 7). For example, under age 65 disabled beneficiaries were hospitalized at a rate 17 percent below similar beneficiaries in Traditional FFS Medicare (299 versus 361 per 1,000 beneficiaries per year, respectively). Frail elderly Medicare Advantage beneficiaries had rates of hospital outpatient visits substantially above rates for similar beneficiaries in Traditional FFS Medicare (26 visits per member per year compared to 18 visits respectively). Results were similar in the matched overall Medicare population, where Medicare Advantage beneficiaries had a 21 percent higher rate of outpatient utilization (21 visits per member per year compared to 17 visits respectively), including procedures at stand-alone outpatient facilities and hospital outpatient visits, excluding the emergency room. The number of observation stays were 16 to 35 percent higher for all high-need, high-cost populations in Medicare Advantage compared to the same vulnerable populations in Traditional FFS Medicare. These results were similar in the overall Medicare populations.

Exhibit 7: Hospital Utilization for Matched High-Need, High-Cost Populations

Metric	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff
<i>Number of beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Number of Inpatient Hospitalizations (per 1,000 members)	299.0	361.0	-17%	981.0	1031.0	-5%	318.0	356.0	-11%	218.0	242.0	-10%
Number of Outpatient Visits (per member)	25.5	17.5	46%	52.2	31.5	66%	27.6	25.0	11%	20.6	17.0	21%
Number of Observation Stays (per 1,000 members)	239.0	203.0	18%	618.0	458.0	35%	278.0	241.0	16%	169.0	140.0	21%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

Costs of care differed for high-need, high-cost beneficiaries in Medicare Advantage compared to Traditional FFS Medicare. Medicare Advantage per beneficiary, per year costs for inpatient hospital care ranged from \$3,672 for under age 65 disabled to \$13,479 for the frail elderly. For the same populations in Traditional FFS Medicare, inpatient hospital costs ranged from \$4,768 to \$14,866 per beneficiary per year (Exhibit 8). In other words, inpatient costs of care were 9 to 23 percent lower across all high-need, high-cost populations in Medicare Advantage compared to Traditional FFS Medicare. On the other hand, hospital outpatient costs in Medicare Advantage were higher for all three high-need, high-cost populations, with differences in rates ranging from 5 to 14 percent above Traditional FFS Medicare spending. Lower hospital inpatient costs more than offset higher hospital outpatient costs in Medicare Advantage, resulting in combined Medicare Advantage costs being lower compared to Traditional FFS Medicare for all high-need, high-cost populations.

Exhibit 8: Hospitalization Cost for Matched High-Need, High-Cost Populations

Metric	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff
<i>Number of beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Inpatient Hospital Cost	\$3,672	\$4,768	-23%	\$13,479	\$14,866	-9%	\$4,074	\$4,524	-10%	\$2,807	\$3,222	-13%
Outpatient Cost	\$2,901	\$2,705	7%	\$4,172	\$3,649	14%	\$3,209	\$3,068	5%	\$1,992	\$1,863	7%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A /B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations are per patient per year and may differ due to rounding

### Emergency Room Utilization and Costs

The under age 65 disabled and beneficiaries with major complex chronic conditions used emergency room care at nearly the same rates in Medicare Advantage as in Traditional FFS Medicare (differences in utilization rates were within 2 percent) (Exhibit 9). However, emergency room visits for frail elderly beneficiaries were 40 percent higher in Medicare Advantage than for similar beneficiaries in Traditional FFS Medicare. For all high-need, high-cost beneficiary populations, Medicare Advantage costs for emergency room care were 11 percent to 36 percent higher than Traditional FFS Medicare, even when the use of emergency care was only 4 percent higher in Medicare Advantage overall.

Exhibit 9: Emergency Room Utilization and Cost for Matched High-Need, High-Cost Populations

Metric	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff
<i>Number of Beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Number of ER Visits (per 1,000 members)	1,241.0	1,270.0	-2%	1,790.0	1,278.0	40%	847.0	833.0	2%	665.0	642.0	4%
Emergency Room Costs	\$941	\$694	36%	\$1,309	\$972	35%	\$635	\$572	11%	\$494	\$393	26%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations are per patient per year and may differ due to rounding



## Cost of Primary and Specialty Physician Services and Tests

Medicare Advantage costs for primary care (physician services and lab tests) were substantially higher than Traditional FFS Medicare for high-need, high-cost beneficiaries (Exhibit 10). For example, Medicare Advantage primary care costs were \$894 compared to \$632 – 41 percent higher – for beneficiaries with major complex chronic conditions compared to the same populations in Traditional FFS Medicare.

Costs of specialty physician care were similar in Medicare Advantage and Traditional FFS Medicare for the under age 65 disabled and frail elderly populations, but were 19 percent lower for major complex chronic beneficiaries in Medicare Advantage compared to Traditional FFS Medicare and 10 percent lower in the overall matched populations. In the overall matched Medicare populations, Medicare Advantage had 30 percent higher primary care services costs.

Exhibit 10: Physician Services Cost for Matched High-Need, High-Cost Populations

Metric	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff
<i>Number of Beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Physician Services and Tests: Primary Care Cost	\$571	\$446	28%	\$1,487	\$1,148	29%	\$894	\$632	41%	\$562	\$434	30%
Physician Services and Tests: Specialty Care Cost	\$2,555	\$2,547	0%	\$5,321	\$5,447	-2%	\$3,077	\$3,790	-19%	\$2,191	\$2,445	-10%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)

Note: Calculations are per patient per year and may differ due to rounding

## Post-Acute Care Utilization and Costs

High-need, high-cost Medicare Advantage beneficiaries experienced lower utilization of post-acute care compared to similar beneficiaries in Traditional FFS Medicare across all care settings (Exhibit 11). For example, skilled nursing facility days were 16 to 41 percent lower in Medicare Advantage compared to Traditional FFS Medicare across the high-need, high-cost populations. Results were similar in the overall matched populations, where Medicare Advantage beneficiaries' had 29 percent fewer days in a skilled nursing facility compared to Traditional FFS Medicare beneficiaries. Differences were largest for long-term acute care hospital days—ranging from 13 to 55 percent lower in Medicare Advantage compared to Traditional FFS. Results were similar in the overall matched Medicare population in all other post-acute care settings including home health, inpatient rehabilitation facilities, and long-term acute care hospitals, with Medicare Advantage beneficiaries spending fewer days.

Exhibit 11: Post-Acute Care Utilization for Matched High-Need, High-Cost Populations

Metric	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff
<i>Number of Beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Skilled Nursing Facility Days (per 1,000 members)	855.0	1450.0	-41%	12,054.0	17,155.0	-30%	898.0	1065.0	-16%	1,299.0	1,823.0	-29%
Home Health Agency Days (per 1,000 members)	2850.0	3887.0	-27%	19,715.0	21,926.0	-10%	3683.0	5062.0	-27%	2,963.0	3,641.0	-19%
Inpatient Rehabilitation Facility Days (per 1,000 members)	88.0	104.0	-15%	709.0	932.0	-24%	47.0	57.0	-17%	82.0	104.0	-21%
Long Term Acute Care Hospital Days (per 1,000 members)	58.0	129.0	-55%	223.0	450.0	-50%	21.0	24.0	-13%	33.0	64.0	-49%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

In general, differences in post-acute care costs were aligned with differences in utilization of post-acute care in all populations, including the overall Medicare population (Exhibit 12). Medicare Advantage high-need, high-cost beneficiaries had zero to 44 percent lower costs for long-term acute care hospital stays compared to similar Traditional FFS Medicare beneficiaries. A notable exception was Medicare Advantage costs for skilled nursing facilities: Medicare Advantage costs were 162 percent higher for beneficiaries with major complex chronic conditions and 7 percent higher for frail elderly beneficiaries compared to Traditional FFS Medicare even though rates of utilization of care in these populations were substantially lower. Higher costs in skilled nursing facilities in Medicare Advantage also occurred in the overall matched Medicare populations, where skilled nursing costs were 17 percent higher in Medicare Advantage than in Traditional FFS Medicare.

Exhibit 12: Post-Acute Care Cost for Matched High-Need, High-Cost Populations

Metric	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff
<i>Number of Beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Skilled Nursing Facility Cost	\$496	\$569	-13%	\$7,258	\$6,762	7%	\$547	\$209	162%	\$780	\$669	17%
Home Health Agency Cost	\$260	\$452	-42%	\$1,922	\$2,917	-34%	\$348	\$575	-40%	\$284	\$454	-38%
Inpatient Rehabilitation Facility Cost	\$152	\$176	-14%	\$1,131	\$1,488	-24%	\$79	\$97	-18%	\$134	\$169	-21%
Long Term Acute Care Hospital Cost	\$94	\$167	-44%	\$367	\$651	-44%	\$28	\$28	0%	\$52	\$88	-40%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations are per patient per year and may differ due to rounding

## Prescription Drug Utilization

High-need, high-cost Medicare Advantage beneficiaries had a similar number of unique medications per person per year (Exhibit 13) compared to Traditional FFS Medicare. The number of unique medications a high-need, high-cost beneficiary is taking ranged from 11 to 13 per beneficiary in both Medicare Advantage and Traditional FFS Medicare. In the overall Medicare population, the number of unique medications was 9 for both Medicare Advantage and Traditional FFS Medicare.

Exhibit 13: Number of Unique Medications in Matched High-Need, High-Cost Populations

Metric	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff
<i>Number of Beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Number of Unique Medications	10.8	10.6	1%	13.0	13.5	-3%	12.1	12.8	-5%	8.6	8.9	-3%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

## Durable Medical Equipment Cost

The differences in costs between Medicare Advantage and Traditional FFS Medicare for durable medical equipment for high-need, high-cost beneficiaries ranged from 13 percent higher for beneficiaries with major complex chronic conditions to 69 percent higher for frail elderly beneficiaries (Exhibit 14). In the overall matched populations, Medicare Advantage spending was 27 percent higher on durable medical equipment compared to Traditional FFS Medicare.

Exhibit 14: Durable Medical Equipment Cost for Matched High-Need, High-Cost Populations

Metric	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff
<i>Number of Beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Durable Medical Equipment Cost	\$513	\$426	20%	\$897	\$530	69%	\$405	\$358	13%	\$304	\$240	27%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

## Total Costs of Care – Pharmacy and Medical Care Costs

Medicare Advantage beneficiaries had lower pharmacy and medical care costs for high-need, high-cost beneficiaries as compared to similar beneficiaries in Traditional FFS Medicare (Exhibit 15). For Part D drugs, beneficiaries' costs were 38 to 44 percent lower in Medicare Advantage compared to Traditional FFS Medicare. Similarly, medical costs were 3 to 6 percent lower for high-need, high-cost beneficiaries in Medicare Advantage compared to Traditional FFS Medicare beneficiaries. In the overall matched Medicare population, total costs of care per beneficiary (including medical and pharmacy costs) were 15 percent lower in Medicare Advantage compared to Traditional FFS Medicare.

Exhibit 15: Health Care Cost for Prescription Drugs, Medical, and Combined for Matched High-Need, High-Cost Populations

Metric	Disabled <65			Frail Elderly			Major Complex Chronic			Overall Population		
	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff	Medicare Advantage	Traditional FFS Medicare	Diff
<i>Number of Beneficiaries</i>	252,820	252,820		94,832	94,832		233,572	233,572		1,262,180	1,262,180	
Part D Costs	\$4,772	\$7,731	-38%	\$3,740	\$6,187	-40%	\$3,473	\$6,244	-44%	\$2,589	\$4,395	-41%
Medical Costs	\$12,157	\$12,951	-6%	\$37,344	\$38,429	-3%	\$13,296	\$13,853	-4%	\$9,601	\$9,976	-4%
Combined Costs	\$16,928	\$20,683	-18%	\$41,084	\$44,616	-8%	\$16,769	\$20,097	-17%	\$12,190	\$14,371	-15%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)

Note: Calculations may differ due to rounding

# DISCUSSION

High-need, high-cost beneficiaries have heightened needs for integrated care and care coordination programs to help manage their complex conditions. Medicare Advantage, as currently designed, has incentives and the flexibility to offer benefits and care programs to meet these needs.

This study found substantially higher rates of preventive care received by high-need, high-cost beneficiaries in Medicare Advantage relative to Traditional FFS Medicare. Medicare Advantage vaccination rates were as much as 52 percent higher than Traditional FFS Medicare. These outcomes have even greater importance today as the elderly with chronic conditions are most susceptible to the coronavirus and will be high priority for early use of the vaccine.

Greater utilization of preventive care for these vulnerable populations was also demonstrated by higher rates of screening for depression and initiation of follow-up plans, as well as initiation of alcohol and substance abuse treatment in Medicare Advantage. Higher rates of physician visits within 14-days of hospital discharge may also be associated with better performance on quality outcomes in Medicare Advantage; for example, other published studies have shown an association between post-discharge follow-up visits and lower hospital readmission rates.<sup>12</sup>

These higher rates of preventive care and initiation of follow-up care across a range of measures indicate that benefits and tools deployed in Medicare Advantage are aligned with evidence-based practices and appear to be associated with higher quality of care. Medicare Advantage is able to boost use of preventive services for this vulnerable population through a range of additional high-touch outreach and care coordination programs that target beneficiaries at risk for health complications. These benefits are offered in Medicare Advantage through the flexibility of capitated payment and savings from providing efficient care.

In this study, sizable differences in utilization of care were observed in Medicare Advantage compared to Traditional FFS Medicare. Medicare Advantage high-need, high-cost beneficiaries experienced lower rates of hospitalizations, readmissions, specialty physician services, and post-acute care, while experiencing greater use of primary care and durable medical equipment compared to similar beneficiaries in Traditional FFS Medicare. Rates of facility-based care vary greatly in Traditional FFS Medicare and do not necessarily translate to better outcomes. The lower rates of post-acute care observed in this study suggest that care management techniques in Medicare Advantage may have shifted care patterns of high-need high-cost beneficiaries toward primary care – a pattern that research shows improves quality of care and cost outcomes.<sup>13</sup>

Findings in this study also indicate that Medicare Advantage plans balanced less acute, facility-based, and institutional care with higher rates of outpatient facility and physician care for patients with complex care needs. Additional studies could further explore these trends and their association with improved health outcomes.

Differences in costs of care between Medicare Advantage and Traditional FFS Medicare may also reflect a positive impact of integrated care coordination. Hospital costs for high-need, high-cost beneficiaries in Medicare Advantage were lower while outpatient costs for high-need, high-cost Medicare Advantage beneficiaries were higher compared to Traditional FFS Medicare. These outcomes do not appear to have hampered quality of care for high-need, high-cost beneficiaries.

Combined prescription drug and medical care costs also were lower in Medicare Advantage than in Traditional FFS Medicare for the high-need, high-cost population, due primarily to lower prescription drug costs. Greater use of generic prescription drugs, volume discounts, formularies, and care management may be contributing to lower costs. These more efficient utilization and cost patterns, in turn, enable Medicare Advantage plans to provide extra benefits (such as lower cost sharing for primary care and prescription drugs) that are valuable to this vulnerable population.

While the vast majority of outcomes were positive for high-need, high-cost beneficiaries, some outcomes were unexpected. On one measure (statin therapy for patients with cardiovascular disease) Medicare Advantage outcomes were slightly below Traditional FFS Medicare. Emergency room visits and costs were significantly greater for frail elderly beneficiaries in Medicare Advantage compared to Traditional FFS Medicare. These findings need further exploration as previous research focused on Medicare beneficiaries with prevalent chronic conditions such as diabetes found contrary results.<sup>13</sup>

The data also show that home health utilization is lower for all three populations in Medicare Advantage compared to Traditional FFS Medicare. One possible explanation is that inappropriate use of these services is minimized in Medicare Advantage relative to Traditional FFS Medicare, but further research is needed to evaluate differences in use of home health services.

# CONCLUSION

This study finds that overall Medicare Advantage delivered robust positive outcomes for high-need, high-cost beneficiaries compared to similar populations in Traditional FFS Medicare. Higher utilization of preventive screenings, preventive therapy, and post-acute care follow-up in Medicare Advantage suggests that care management results in higher quality of care for this vulnerable population.

Care coordination and care management in Medicare Advantage also had a positive impact on outcomes such as lower avoidable hospitalization rates, fewer hospital readmissions, and lower use of high-risk medications. These results show that beneficiaries were able to avoid inpatient stays while increasing the utilization of outpatient care.

These findings taken together indicated that care delivery in Medicare Advantage was largely associated with better outcomes for high-need, high-cost Medicare Advantage beneficiaries. These outcomes were also associated with lower costs of care. Medicare Advantage plans use the savings to provide additional benefits relative to Traditional FFS Medicare.

The hallmark features of Medicare Advantage—risk-adjusted capitated payment, strong value-based performance incentives, and flexibility in benefit design—enable health plans to offer care management interventions that meet complex care needs of vulnerable beneficiaries in ways that produce robust positive outcomes and greater value for high need, high cost beneficiaries.

# NOTES

- <sup>1</sup> Hayes, S. L., Salzberg, C. A., McCarthy, D., Radley, D. C., Abrams, M. K., Shah, T. and Anderson, G. F. "High-need, high-cost patients: Who are they and how do they use health care — A population-based comparison of demographics, health care use, and expenditures" New York, NY: The Commonwealth Fund (2016).
- <sup>2</sup> Gretchen Jacobsen et al., "A Dozen Facts About Medicare Advantage in 2019" (Henry J. Kaiser Family Foundation, June 2019).
- <sup>3</sup> Karen E. Joynt et al., "Segmenting high-cost Medicare patients into potentially actionable cohorts" *Healthcare* 5, no. 1–2 (Mar. 2017): 62–67.
- <sup>4</sup> Hayes, S. L., Salzberg, C. A., McCarthy, D., Radley, D. C., Abrams, M. K., Shah, T. and Anderson, G. F. "High-need, high-cost patients: Who are they and how do they use health care — A population-based comparison of demographics, health care use, and expenditures" New York, NY: The Commonwealth Fund (2016).
- <sup>5</sup> McGuire T.G., Newhouse J.P., Sinaiko A.D. "An economic history of Medicare part C" [published correction appears in *Milbank Q.* 2013 Mar;91(1):210]. *Milbank Q.* 2011;89(2):289-332.
- <sup>6</sup> Centers for Medicare and Medicaid Services. "Trump Administration Drives Down Medicare Advantage and Part D Premiums for Seniors" (Centers for Medicare and Medicaid Services, Sept. 2019).
- <sup>7</sup> Gretchen Jacobsen et al., "A Dozen Facts About Medicare Advantage in 2019" (Henry J. Kaiser Family Foundation, June 2019).
- <sup>8</sup> Christie Teigland et al., "As It Grows, Medicare Advantage Is Enrolling More Low-Income and Medically Complex Beneficiaries" (Commonwealth Fund, May 2020); Christie Teigland et al., "Medicare Advantage Achieves Cost-Effective Care and Better Outcomes for Beneficiaries with Chronic Conditions Relative to Fee-for-Service Medicare" (Better Medicare Alliance, 2018); Brian Powers, et al., "The Beneficial Effects of Medicare Advantage Special Needs Plans on Patients with End-Stage Renal Disease" *Health Affairs* 39, No. 9 (2020): 1486-1494.
- <sup>9</sup> Karen E. Joynt et al., "Segmenting high-cost Medicare patients into potentially actionable cohorts" *Healthcare* 5, no. 1–2 (Mar. 2017): 62–67.
- <sup>10</sup> Frailty indicators include abnormality of gait; abnormal loss of weight/underweight; adult failure to thrive; cachexia, debility; difficulty in walking; fall; muscular wasting and disuse atrophy; muscle weakness; senility without mention of psychosis; durable medical equipment.
- <sup>11</sup> This approach allows direct cost comparisons of MA to FFS as required for this study and is commonly accepted practice in epidemiology and economic evaluation research
- <sup>12</sup> Felipe O Marcondes, MD et al., "Does Scheduling a Post discharge Visit with a Primary Care Physician Increase Rates of Follow-up and Decrease Readmissions?" (*Journal of Hospital Medicine*, 2019).
- <sup>13</sup> Barbara Starfield et al., "Contribution of primary care to health systems and health" *Milbank Q.* 2005 Sep; 83(3): 457–502.
- <sup>14</sup> Avalere Health, "Medicare Advantage Achieves Cost-Effective Care and Better Outcomes for Beneficiaries with Chronic Conditions Relative to Fee-for-Service Medicare" (Avalere Health, 2018).
- <sup>15</sup> National Committee for Quality Assurance, "Healthcare Effectiveness Data and Information Set (HEDIS) Measures and Technical Resources" (National Committee for Quality Assurance, 2020).
- <sup>16</sup> Health Economics and Advanced Analytics, Avalere Health, 2020.
- <sup>17</sup> Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®).
- <sup>18</sup> Centers for Medicare and Medicaid Services, "Chronic Conditions Data Warehouse", (Centers for Medicare and Medicaid Services, 2020).
- <sup>19</sup> Richard A. Deyo, Daniel C. Cherkin, and Marcia A. Ciol, "Adapting a Clinical Comorbidity Index for Use with ICD-9-CM Administrative Databases," *Journal of Clinical Epidemiology* 45, no. 6 (1992): 613–19.
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# APPENDIX A: OUTCOMES MEASURES USED

The findings include results from a comparison of 23 quality measures chosen from the larger quality reporting system measure sets dataset.<sup>15</sup> Avalere researchers chose a discrete set of clinical quality measures that are closely associated with the appropriate delivery of care to examine the potential impact of evidence-based care management practices on patient outcomes. They are listed below:

- Hospitalizations from Potentially Avoidable Complications: Acute Conditions
- Hospitalizations from Potentially Avoidable Complications: Chronic Conditions
- Hospitalizations from Potentially Avoidable Complications: Overall Conditions
- Physician Office Visit After Hospitalization
- Plan All-Cause Readmissions
- Preventive Screenings: Eye Exam for Diabetics
- Preventive Screenings: Depression
- Preventive Screenings: Prostate Cancer
- Preventive Screenings: Breast Cancer
- Falls Risk Assessment
- Vaccinations: Influenza
- Vaccinations: Pneumonia
- Concurrent Use of Opioids and Benzodiazepines
- High Risk Medication Use
- Alcohol/Substance Abuse Treatment Initiation
- Alcohol/Substance Abuse Engagement
- Preventive Screenings: Cholesterol
- Preventive Screenings: Colonoscopy
- DMARD Therapy for RA
- Comprehensive Diabetes Care: HbA1c Testing
- Comprehensive Diabetes Care: Medical Attention for Nephropathy
- Diabetes: Poor Control of HbA1c
- Receipt of Statin Therapy CVD

# APPENDIX B: HOW THIS STUDY WAS CONDUCTED<sup>16</sup>

## Objectives

The objective of the analysis compared the overall health care utilization and quality of care, as well as evaluate the value of care coordination, for individuals between two sample populations of Medicare beneficiaries — those enrolled in Traditional FFS Medicare and those enrolled in Medicare Advantage. The populations were broken down into clinical cohorts to further assess differences for high-need, high-cost beneficiaries.

## Study Design and Cohort Selection

A descriptive cross-sectional cohort design was used in this analysis. The samples include 1,478,685 Medicare Advantage-Prescription Drug beneficiaries (extracted from the Inovalon MORE<sup>2</sup> Registry<sup>®</sup>, a large national multi-payer health insurance claims dataset) and 7,983,070 Traditional FFS Medicare beneficiaries (accessed via a research-focused DUA with CMS).<sup>17</sup> To be eligible for inclusion in the study, Medicare beneficiaries were required to be continuously enrolled in the same health plan with medical and pharmacy benefit coverage for each of the three 12-month reporting periods from January 1, 2015 to December 31, 2017 (with the standard allowable gap of no more than 45-days, consistent with Healthcare Effectiveness Data and Information Set (HEDIS) and CMS definitions).

Avalere's data on SDOH is derived from Acxiom's Info Base Geo<sup>©</sup> files. The data are aggregated at the 9-digit ZIP level from multiple, comprehensive individual and household databases (e.g., public records such as phone directories, government information from real estate property records, county courthouses, birth notifications, death records, U.S. Census, self-reported data, buying activity from online registrations/surveys, travel purchases, retailers). Most published research on SDOH has used 5-digit ZIP code level Census data which are aggregated across about 42,000 different geographic areas or data from the American Community Survey which represents about 220,000 geographic areas. These sources include widely disparate populations and can mask the effect of SDOH on utilization and outcomes. In contrast, the Acxiom data is available at the ZIP+4 level which covers approximately 30 million discrete geographic areas, with an average of approximately 5 households per neighborhood, providing a much more precise assignment of social risk factor characteristics. Previous research has demonstrated that sociodemographic and community-resource characteristics at the near-neighborhood level can serve as close proxies for these characteristics at the member level and are highly predictive of health behaviors and outcomes.

## Data Analysis

The identified cohorts, and the overall populations, were compared based on demographic characteristics (e.g. age, gender, race/ethnicity, census region, rural/urban status), along with prevalence of socioeconomic characteristics including median household income, percent of households living below the federal poverty level, percent of households with a bachelor's degree or higher, and percent of households with married individuals. Clinical composition was evaluated using the top 20 comorbidities based on Centers for Medicare and Medicaid chronic conditions data warehouse (CCW) in each cohort.<sup>18</sup> In addition to the top 20 comorbid conditions, disease burden was assessed by the Charlson Comorbidity Index (CCI), a weighted score of a person's disease severity that accounts for both the number and severity level of comorbid conditions as they relate to risk of mortality.<sup>19</sup>

After evaluating the characteristics of Medicare Advantage and Traditional FFS Medicare beneficiaries in the six clinical cohorts, Avalere used propensity score matching to control for any differences between the beneficiaries by cohort. The model used in the propensity score matching was specified as a multivariate logistic regression. Patients in Traditional FFS Medicare were matched to patients in Medicare Advantage based on a matching algorithm.<sup>20</sup> A series of eight matching attempts were made starting with the eighth decile in order to maximize the match and retain the sample while also ensuring balance among the cohorts. All unsuccessfully matched patients were excluded from subsequent analyses. To show the efficacy of the match, descriptive statistics were provided for the two populations before and after matching (Exhibits 1 and 2). Matching resulted in a final study cohort of 1,262,180 matched pairs of beneficiaries.

Exhibit 1: Demographic Characteristics (Prior to Matching)

Demographic Characteristics	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff
<i>Number of Beneficiaries</i>	1,478,685	7,983,070	
Female	57.3	57.8	-1%
Average Age	70.2	71.1	-1%
Under Age 65	20.0	18.0	11%
Identifies as a Racial / Ethnic Minority	33.7	16.0	111%
Lives in an Urban Area	80.4	65.6	23%
Disability / ESRD as Original Reason for Medicare Entitlement	30.8	26.7	16%
Non-Dual Eligible	60.4	71.6	-16%
Partial-Dual Eligible	11.1	7.0	59%
Full-Dual Eligible	28.5	21.4	33%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

Exhibit 2: Demographic Characteristics (Matched)

Demographic Characteristics	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff
<i>Number of Beneficiaries</i>	1,262,180	1,262,180	
Female	57.8	57.8	2%
Under Age 65	52.5	52.6	0%
Identifies as a Racial / Ethnic Minority	31.0	30.7	1%
Lives in an Urban Area	79.3	78.8	1%
Disability / ESRD as Original Reason for Medicare Entitlement	30.6	30.7	0%
Non-Dual Eligible	63.4	63.6	0%
Partial-Dual Eligible	10.5	10.3	2%
Full-Dual Eligible	26.2	26.1	0%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

Exhibit 3: Socio-Economic Characteristics at the Near-Neighborhood Level (Prior to Matching)

Socio-Economic Characteristics	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff
<i>Number of Beneficiaries</i>	1,478,685	7,983,070	
Median Household Income of Less than \$30,000	19.0	9.6	98%
Where 68% or More Live Alone	26.2	11.2	134%
With an Unemployment Rate of 8% or more	47.1	33.8	39%
Did not Complete High School	15.1	12.2	24%
With 30% or more of the Households Below the Federal Poverty Level	12.4	5.0	148%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

Exhibit 4: Socio-Economic Characteristics at the Near-Neighborhood Level (Matched)

Socio-Economic Characteristics	Medicare Advantage (%)	Traditional FFS Medicare (%)	Diff
<i>Number of Beneficiaries</i>	1,262,180	1,262,180	
Median Household Income of Less than \$30,000	16.3	16.2	1%
Where 68% or More Live Alone	22.8	22.4	2%
With an Unemployment Rate of 8% or more	45.4	45.3	0%
Did not Complete High School	14.5	14.4	0%
30% or more of the Households Below the Federal Poverty Level	10.3	10.3	0%

Data: Centers for Medicare and Medicaid Services 100% Medicare Part A/B FFS Claims and 100% Part D Prescription Drug Event Data (PDE); Inovalon's Medical Outcomes Research for Effectiveness and Economics Registry (MORE2 Registry®)  
 Note: Calculations may differ due to rounding

After propensity matching of patients, the study population was segmented as defined into high-need, high-cost populations. The two populations showed a similar distribution within the five identified cohorts, with more than 30 percent of all beneficiaries falling into the minor complex chronic cohort.

The study identified key differences in quality, utilization, and cost in the identified cohorts of Medicare Advantage and Traditional FFS Medicare beneficiaries in three comparison years (2015-2017). Health care cost were calculated using actual plan and patient payments to providers for Traditional FFS Medicare beneficiaries. For Medicare Advantage beneficiaries, medical costs were calculated by applying the same standardized Medicare allowed payment amount to each medical service based on published Medicare rates. For pharmacy costs, standardized pricing was applied at the National Drug Coding (NDC) level for each pharmacy claim using a standard discount from the average wholesale price for both Medicare Advantage and Traditional FFS Medicare. Care management and coordination was evaluated using evidence-based measures that are closely associated with the appropriate delivery of care, such as receipt of preventive screenings, needed tests (e.g., HbA1c), vaccinations, and evidence of recommended follow-up care.

Utilization included hospitalizations, length of stay, outpatient visits, emergency room (ER) visits, observation room visits, prescription drug fills, unique medications, and post-acute care services. Quality measures included those used by CMS in Part C and D Star Ratings for Medicare Advantage plans for medication adherence, appropriate use of medications, hospitalizations for potentially preventable complications, and preventative screenings.

All analyses were performed using SAS software, version 9.4. (SAS Institute Inc., Cary, N.C.)

### Limitations

Several factors may limit the generalizability of the findings. First, this was a retrospective observational analysis that was not designed to examine causal relationships. The beneficiary populations studied were defined by beneficiaries' choice between Medicare Advantage or Traditional FFS Medicare and does not account for beneficiaries enrolled in Employer Group Waiver Plans.

While the Inovalon MORE<sup>2</sup> Registry<sup>®</sup> is largely representative of the national Medicare Advantage beneficiary population, there is some regional imbalance with more beneficiaries in the Northeastern US and fewer in the West. Using solely administrative data limits the breadth of the quality evaluation possible, given many of the quality measures are based on satisfaction and health survey data or sample chart reviews. In addition, studied quality measures were chosen from the larger quality reporting system measure sets. Measures were chosen to reflect evidence-based care management practices and are not generalizable to broader health care outcomes.

Finally, to compare costs, it was assumed that allowed amounts estimated for Medicare Advantage for medical services and prescription drugs were comparable with plan and patient payment amounts in Traditional FFS Medicare and does not take into account Medigap plans or supplemental benefit offerings. Given these limitations, the need for multivariate analysis, risk adjustment, and further research on this topic is warranted.