ATI Advisory

ISSUE BRIEF:

Institutional Special Needs Plan (I-SNP) Enrollment and Outcomes in Long-Term Care Settings

February 2025

About this Work

Through funding from the American Health Care Association (AHCA), ATI Advisory (ATI) has explored the association between Institutional Special Needs Plan (I-SNP) enrollment and healthcare utilization, spending, and quality outcomes for long-term care residents enrolled in Medicare who had one or more nursing facility stays of 90 days or longer during the year.

Introduction

This white paper investigates the association between Institutional Special Needs Plan (I-SNP) enrollment and healthcare utilization, spending, and quality outcomes for long-term care residents enrolled in Medicare who had one or more nursing facility stays of 90 days or longer during the year. We compared I-SNP beneficiaries to both Medicare fee-for-service (FFS) beneficiaries and non-I-SNP Medicare Advantage (MA) beneficiaries to determine if there are differences in demographics and functional and cognitive acuity characteristics between the analysis populations. Using multivariate regression analyses, we studied eight outcome measures, including emergency department visits, hospitalizations, 30-day readmissions, and spending and quality outcomes, to determine if there are differences in outcomes between populations after adjusting for several sources of potential confounding bias.

Our findings indicate that I-SNP enrollment was associated with better quality for three of four studied outcomes, namely pressure ulcers, fall injuries, and infections, compared to Medicare FFS beneficiaries and non-I-SNP MA beneficiaries. We also found I-SNP enrollment was associated with lower acute care utilization, such as lower rates of all-cause emergency department visits, compared to non-I-SNP MA beneficiaries, the only comparison group analyzed for acute care utilization. Conversely, we found higher Medicare Part D spending among I-SNP beneficiaries compared to Medicare FFS beneficiaries and non-I-SNP MA beneficiaries.

This paper provides a preliminary analysis of I-SNPs' association with quality and spending among long-term nursing facility residents; nevertheless, limitations in analysis design and the potential for unobserved confounding bias, such as from medical acuity or the duration of residence in the nursing facility, prevent causal inference. Further analysis would be needed to causally assess whether I-SNPs improve beneficiary outcomes, and if so, through what mechanisms. This evidence could inform policymaking to improve care quality, outcomes, and spending among residents of nursing facilities. We share initial insights for policymakers and healthcare providers based on our analysis results; however, these insights should be informed by future analyses to strengthen the evidence base surrounding I-SNPs.

Our findings indicate that I-SNP enrollment was associated with better quality for three of four studied outcomes, namely pressure ulcers, fall injuries, and infections, compared to Medicare FFS beneficiaries and non-I-SNP MA beneficiaries.

BACKGROUND

I-SNPs are special needs plans that serve MA eligible individuals who reside in a participating I-SNP facility for 90 days or more, or who reside in the community but need equivalent care as provided in such facilities.[1] (Here and throughout, this paper uses *I-SNP* to include all three subtypes of I-SNPs, including those that enroll Institutional Equivalent individuals in the community.[2]) Eligible individuals must reside in the I-SNP's service area, be enrolled in both Medicare Parts A and B, and meet an institutional level of care as determined by an entity independent of the I-SNP.[3]

As with all special needs plans, I-SNPs must have a Model of Care (MOC) tailored to the unique needs of each of its enrollees—in this case, individuals with long-term care needs.[3] The I-SNP's MOC must describe the unique health needs of its enrollees as well as any potential limitations and barriers that may pose challenges, such as dementia or lack of caregiver or family support. Furthermore, the MOC must describe any licensure or training requirements for staff related to the population the I-SNP serves, for example, requiring I-SNP providers to receive training in geriatrics. Through this MOC, I-SNPs manage Medicare healthcare services via an Interdisciplinary Care Team (ICT), including medical, behavioral health, social work, and pharmacy services, and provide support for caregivers and family.[3] All members receive an initial Health Risk Assessment (HRA) upon enrollment to evaluate medical, functional, and psychosocial needs; I-SNPs then conduct reassessments annually or when there is a change in the member's condition.[3] Additionally, each member receives an individualized plan of care, which outlines their specific healthcare needs, goals, and preferences.[4] I-SNPs can be administered by different types of entities, including health insurers and provider organizations.

We analyzed the relationship between I-SNP enrollment and utilization, quality, and spending outcome measures, among MA eligible individuals residing in long-term nursing facility stays. We compared I-SNP beneficiaries to two comparison populations: 1) Medicare FFS beneficiaries enrolled in both Part A and Part B or beneficiaries enrolled in solely Medicare Part A and 2) MA beneficiaries enrolled in any MA plan that is not an I-SNP. The non-I-SNP MA plan population includes individuals enrolled in other Special Needs Plans, such as Chronic Condition Special Needs Plans (C-SNPs) or Dual Eligible Special Needs Plans (D-SNPs). All individuals included in the analysis populations must have had one or more nursing facility stay for 90 days or longer during the year (a *long-term nursing facility stay*, hereafter).

I-SNP MOCs require

- An HRA which addresses medical, functional and psychosocial needs
- Care coordination supported by an ICT
- Support for each member's unique needs via an individualized plan of care

1 Institutional Special Needs Plans (I-SNPs). CMS.

2 Specifically, this term refers to I-SNPs, Institutional Equivalent Special Needs Plans (IE-SNPs) and hybrid Institutional/Institutional Equivalent Special Needs Plans (I/IE-SNPs).

3 Model of Care Scoring Guidelines for Contract Year 2026. NCQA, 2024.

4 Special needs plan model of care, 42 CFR 422.101(f).

Data and Methodology

DATA SOURCES

This analysis leveraged data across five sources in CMS's Virtual Research Data Center (VRDC). As calendar year 2022 was the most recent available data period for some of our data sources at the time of analysis, we used data for 2022 throughout our analysis to provide consistent comparisons across Medicare populations and demographic subpopulations.

Data sources used in this analysis include:

- **Medicare Beneficiary Summary File (MBSF):** The MBSF contains data on all Medicare beneficiaries in a given calendar year and provides beneficiary demographics, MA plan enrollment, dual status, and Part D status.
- **Medicare Advantage Encounter Files, Preliminary:** The MA Encounter files provide detailed records about MA enrollees' health care encounters, procedures, and diagnoses with data documented by clinicians, which MA organizations submit to CMS. Our analysis of utilization outcomes for I-SNP MA enrollees and non-I-SNP MA enrollees relies on data from outpatient (emergency department) and inpatient (hospital) settings.
- **Nursing Home Minimum Data Set (MDS) 3.0:** The MDS summarizes health status indicators for active residents currently in Medicare and Medicaid certified nursing homes. These data include a comprehensive assessment of residents' functional capabilities, which is completed on admission to the nursing facility, at the 5-day mark, quarterly, and upon discharge. The MDS provides acuity measures such as activities of daily living (ADL) and cognitive function levels for measuring the acuity of analysis populations, and provides quality outcomes measures data for our regression analysis.
- **Part D Event File:** The Part D Event File contains a record of all prescriptions reimbursed by Medicare prescription drug plans. This includes prescription service dates, quantities, and spending. We used this data to analyze Medicare Part D spending across the three analysis populations.

MEASURES

Outcome Measures:

ATI analyzed eight outcome measures which could indicate the management of medical risk, the quality of care delivered in the nursing home, or both. These eight outcome measures reflect a broad swath of the factors an I-SNP may aim to influence through its model of care, such as care management and restorative nursing. Measures include utilization, quality, and spending outcomes, and are summarized on page 6 in **Table 1**.

The three utilization outcomes we analyzed are all-cause emergency department [ED] visits, all-cause hospitalizations, and 30-day hospital readmissions. These three are similar to federal quality measures treated as indicators of nursing facility care quality.[5,6] Individuals utilizing such acute care are typically experiencing adverse medical events, and some (though not all) of this acute care may be avoidable.[7] Additionally, we tested four assessment-based quality outcomes reflecting individuals' experiences and conditions within the nursing facility, including three measures that are adverse events that may increase the risk of acute care need covered by Medicare: stage III+ pressure ulcers, falls with major injury, and a composite infection measure. The fourth, antipsychotic use, is similar to a federal quality measure[8] and captures a source of potentially inappropriate prescription drug use. Lastly, we analyzed total Part D spending to capture the potential plan-spending effects. Outcome measures were selected prior to running analyses, and all analyzed outcomes are reported in this paper.

5 Design for Care Compare Nursing Home Five-Star Quality Rating System: Technical Users' Guide, January 2025.

6 CMS Value-Based Purchasing (VBP) Measures.

7 Walsh, E.G., Wiener, J.M., Haber, S., Bragg, A., Freiman, M., and Ouslander, J.G. Potentially Avoidable Hospitalizations of Dually Eligible Medicare and Medicaid Beneficiaries from Nursing Facility and Home- and Community-Based Services Waiver Programs. Journal of the American Geriatrics Society. 2012;60(5):821-829.

8 Design for Care Compare Nursing Home Five-Star Quality Rating System: Technical Users' Guide, January 2025.

Table 1. Outcome Measure Data Sources and Definitions

	Outcome	Data Source	Definition
Utilization	Emergency Department (ED) Visits	MA Encounter File (MA only)	Likelihood of having 1+ ED visit in a month
	All-Cause Hospitalizations	MA Encounter File (MA only)	Likelihood of having 1+ short-term hospital admissions
	30-Day Hospital Readmissions	MA Encounter File (MA only)	The likelihood that an index short-term hospital stay resulted in a short-term hospital readmission within 30 days of discharge, among months with 1+ index short-term hospital admission
Quality	Pressure Ulcers (Stage III+)	MDS 3.0 Section M	Having a Stage III, Stage IV, or Unstageable pressure ulcer at time of quarterly assessment
	Falls with Major Injury	MDS 3.0 Section J	Any fall in the quarter causing a fracture, dislocated joint, subdural hematoma, or head injury with altered consciousness
	Antipsychotic Use	MDS 3.0 Section N	Taking antipsychotic medication in 7 days prior to assessment
	Infections Composite	MDS 3.0 Section I	Active Multi-Drug-Resistant Organisms (MDRO), Pneumonia, Septicemia, or Wound Infection in 7 days prior to assessment, or UTI in 30 days prior
Spending	Total Part D Spend	Part D Event File	Total gross costs of prescription drugs covered under Part D

Demographic, Acuity, and Facility Measures

We identified differences in demographics and functional and cognitive acuity characteristics across the three long-term nursing facility resident populations in our descriptive analysis, and we adjusted for differences in facility characteristics in our regression analysis. (See **Table 1** for more detail.) We measured beneficiary age, sex, race and ethnicity, gender, and dual eligibility using Medicare administrative records in the MBSF. We characterized functional needs using MDS assessments, defining *extensive dependence*

in each of seven ADLs as requiring extensive assistance or total dependence in, or not doing, the ADL. Cognitive need is based on the Cognitive Function Scale.[9] ATI's regression analyses controlled not only for these individual characteristics but also for nursing facility characteristics, based on Provider Data Catalog data: Five-Star Quality Rating System overall star ratings, for-profit (versus non-profit or government) ownership, and rurality (based on facility ZIP code). We determined our regression analysis' covariates prior to running regression analyses, after we found that all covariates differed between the three analyzed groups and were generally correlated with analyzed outcomes.

Coverage Type Measure

We identified coverage type, defined as either I-SNP, Medicare FFS, or non-I-SNP MA, using monthly program and plan enrollment data in the MBSF. We labeled plans as I-SNPs using the list of I-SNP contract and plan ID combinations found in the July 2022 Special Needs Plan Report. In the descriptive analysis of demographic and functional and cognitive acuity, coverage type is measured at the last month of an individual's time in a long-term nursing facility stay. In the regression analysis, coverage type is measured in each person-month analyzed.

DEMOGRAPHIC AND ACUITY METHODOLOGY

Demographic and acuity analyses provide a descriptive examination of the total population of interest and include no hypothesis testing or interval estimation. Results reflect unique Medicare beneficiaries with one or more long-term nursing facility stays in 2022. Functional and cognitive acuity reflect individuals' first admission, quarterly, or discharge MDS assessment during a long-term nursing facility stay in the year. We identified demographic information and coverage type based on the last month of the year with a long-term nursing facility stay. This approach ensures that individuals who only became eligible for an I-SNP after entering a nursing facility had the opportunity to be identified as I-SNP beneficiaries if they enrolled in such a plan later during their facility residence in 2022.

9 Thomas, K. S., Dosa, D., Wysocki, A., and Mor, V. The Minimum Data Set 3.0 Cognitive Function Scale. Medical Care. 2017;55(9):e68.

Table 2. Covariate Variables Controlled for in Regression Analysis

	Variable	Variable Splits	Data Source
Individual Characteristics	Age	→ Integer	MBSF
	Race and Ethnicity	→ Black → Hispanic/Latino → White → Other	MBSF
	Sex	→ Male → Female	MBSF
	Dual Eligibility	→ Full Dual → All Others (including partial dual and Medicare only)	MBSF
	Extensive Dependence in Activities of Daily Living (ADLs)	→ Bed Mobility → Dressing → Eating → Locomotion on Unit → Personal Hygiene → Toileting → Transfer	MDS 3.0 Section G, first assessment[10]
	Cognitive Function Scale[11]	→ Cognitively Intact → Mild Cognitive Impairment → Moderate Cognitive Impairment → Severe Cognitive Impairment	MDS 3.0 Sections B, C, and G, first assessment
Facility Characteristics	Nursing Facility Five-Star Quality Rating	→ Stars at half-point intervals, 1-5	Provider Data Catalog
	Nursing Facility Ownership	→ For-profit → Non-profit (includes government owned)	Provider Data Catalog
	Facility Rurality[12]	→ Metropolitan → Micropolitan → Rural and Small Town	Provider Data Catalog

10 First MDS assessment refers to first MDS assessment for an individual during a long-term nursing facility stay in calendar year 2022.

11 Thomas, K. S., Dosa, D., Wysocki, A., and Mor, V. The Minimum Data Set 3.0 Cognitive Function Scale. Medical Care. 2017;55(9):e68.

12 Defined based on 2010 Rural Urban Commuting Area (RUCA) codes assigned by the nursing facility ZIP code, with codes 1-3 deemed metropolitan, 4-6 micropolitan, and all else rural.

REGRESSION METHODOLOGY

ATI's analysis used multivariate regression of MA encounter, MDS assessment, and Part D event data at a member-month level of analysis. Covariates did not change between the analysis outcomes, but the design of the multivariate regression differed by outcome to reflect appropriate measures for different variable types. We designed regressions based on descriptive analysis and did not adjust designs after running the regression analysis. To account for the nature of these regressions as repeated-measures analyses with multi-level covariates, all analyses used generalized estimating equations (GEE) with clustered standard errors at the person and facility level. Regressions of binary outcome variables used GEE with a log link and a binomial distribution, clustering standard errors by person and facility. Regressions of spending variables used GEE with a log link and a Poisson distribution after taking the log of spending variables.[13] Hypothesis testing for regressions used Wald tests to test for non-zero coefficients on a binary coverage type variable. We used SAS Enterprise Guide 7.15 in the CMS VRDC to conduct all analyses.

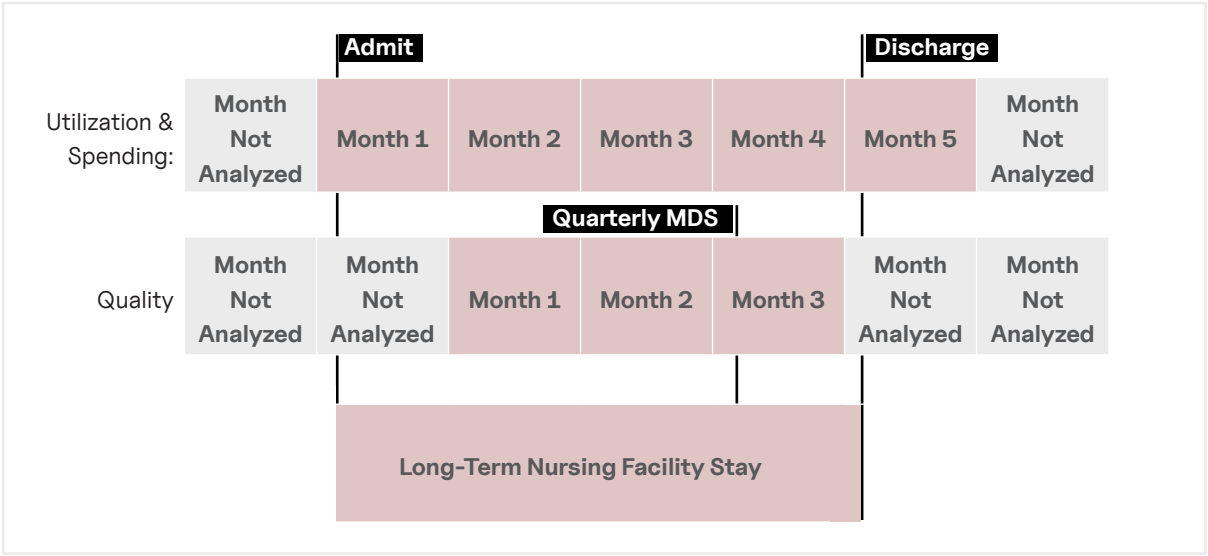
Outcome measures and plan status were identified at the person-month level. Analyzed observations varied by outcome as described below. Each analyzed observation was one person-month that coincided with a long-term nursing facility stay in 2022. This methodology ensured that ATI's analytic sample for both utilization and spending outcomes and quality outcomes incorporated admissions and discharges and mid-year/mid-stay events such as death or switching plan types. Our regression analysis controlled for the demographic and functional and cognitive acuity characteristics identified above in **Table 2.** We made the following variations in the analytic sample:

- For acute care utilization analyses, only I-SNP and non-I-SNP MA person-months were included as analyzed observations, because MA encounters do not reflect utilization among the Medicare FFS population.
- For quality analyses, only the three person-months preceding a quarterly or annual MDS record were included as analyzed observations, and those three person-months were characterized by the subsequent MDS assessment.
- For Part D spending analyses, only person-months with active Part D coverage were included as analyzed observations.

Our approach to measuring quality measures using the MDS and allocating these measurements to person-months is visualized on page 10 in **Figure 1**.

13 For analyses of spending including zero-dollar spending cases, ATI's analysis took the log of Y+1, where Y represents spending, a standard approach to log-transforming variables while include zeros. (The log of 0 is undefined.)

Figure 1. Example Case for Measuring Quality Measures and for Allocating Measures to Person-Months



Findings and Results

DEMOGRAPHICS AND ACUITY FINDINGS

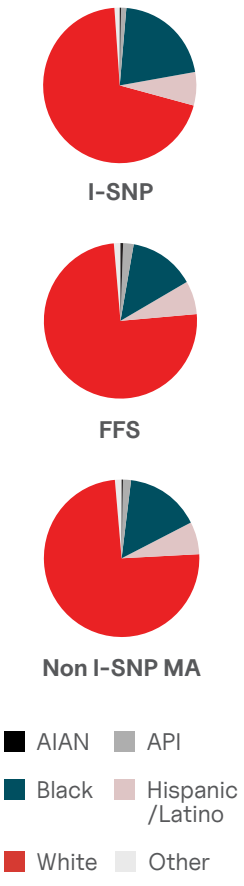
Our analysis identified differences in demographics and functional and cognitive acuity characteristics between the I-SNP, Medicare FFS, and non-I-SNP MA populations. Relative to non-I-SNP MA beneficiaries and FFS beneficiaries, I-SNP beneficiaries in ATI's samples are more likely to be younger, to be Black, to be dually eligible for Medicare and Medicaid, and to have mild or severe cognitive impairment. **Table 6-Table 10** in the Appendix provide full results from this analysis beyond the following description.

We first identified differences in age among the populations in our analysis, finding that the I-SNP population had a higher proportion of individuals who were younger than 65 compared to the Medicare FFS and non-I-SNP MA populations (13.2% compared to 10.9% Medicare FFS and 10.2% non-I-SNP MA). We conducted the remainder of our analyses of demographics and functional and cognitive acuity characteristics only among the population of beneficiaries aged 65 and older, since about nine in ten beneficiaries in our analysis were 65 and older.

We identified several differences in demographics among beneficiaries 65 and older. Among beneficiaries 65 and older, 20.9% of the I-SNP population was Black, compared to 13.8% of the Medicare FFS population and 15.5% of the non-I-SNP MA population. The I-SNP population had a smaller proportion of white individuals (69.6%) compared to the Medicare FFS population (74.9%) and the non-I-SNP MA population (74.6%). Additionally, the I-SNP population was 29.1% and 30.4% more likely to be fully dual eligible for Medicare and Medicaid than the Medicare FFS and non-I-SNP MA populations, respectively (94.8% of I-SNP beneficiaries fully dual eligible compared to 73.4% FFS and 72.7% non-I-SNP MA).

In terms of functional and cognitive acuity characteristics among individuals 65 and older, the I-SNP population was less likely to have extensive dependence in most ADLs. Compared to the Medicare FFS population, the I-SNP population was less likely to have extensive dependence in all ADLs except for personal hygiene; similarly, when compared to the non-I-SNP MA population, the I-SNP population was less likely to have extensive dependence in all ADLs except for personal hygiene and eating. Conversely, we found that the I-SNP population experienced greater levels of cognitive impairment compared to the Medicare FFS and non-I-SNP MA populations. The I-SNP population was more likely to experience mild cognitive impairment—30.6% more likely compared to the Medicare FFS population and 20.4% more likely compared to the non-I-SNP MA population. The I-SNP population was also more likely to experience severe cognitive impairment—20.9% more likely compared to the Medicare FFS population and 42.4% more likely compared to the non-I-SNP MA population.

Differences in Resident Race and Ethnicity among Individuals 65+



OUTCOME FINDINGS

We found that I-SNP enrollment was associated with better outcomes in six of the eight analyzed measures for nursing facility residents, when compared to Medicare FFS or non-I-SNP MA, after adjusting for covariates. When compared to non-I-SNP MA beneficiaries, our analysis found an association between I-SNP enrollment and lower ED visit rates, all-cause readmissions, and hospitalization rates. When compared to Medicare FFS beneficiaries, our analysis found an association between I-SNP enrollment and better outcomes in two quality indicators, namely stage III+ pressure ulcers and a composite measure of infections. Conversely, we found that I-SNP enrollment was associated with higher Medicare Part D spending when compared to Medicare FFS or to non-I-SNP MA. Our detailed findings are provided in **Tables 3-5** below, and visualizations of findings are provided in **Figures 2-3** in the Appendix.

Table 3. Summary of Outcome Measures Associations

	Outcome Measure	I-SNP vs Medicare FFS	I-SNP vs Non-I-SNP MA
Utilization	All-cause ED Visit	Not tested[1]	**Favorable*†**
	All-cause Hospitalization	Not tested[1]	**Favorable*†**
	30-day Readmission Rate	Not tested[1]	**Favorable*†**
Quality	Pressure Ulcer (Stage III+)	**Favorable*†**	**Favorable*†**
	Infection	**Favorable*†**	**Favorable*†**
	Fall with Major Injury	No difference	**Favorable*†**
	Prevalence of Antipsychotic Medication	No difference	Unfavorable*†
Spending	Total Part D Spending	Unfavorable*†	Unfavorable*†

*Indicates statistical significance based on Wald tests at the 5% level. Favorable means I-SNP enrollment was statistically associated with a lower rate of acute care utilization, lower rate of adverse events, or lower spending.

†Indicates that, in addition to being statistically significant based on Wald tests at the 5% level, the regression coefficient for I-SNP enrollment had a p-value < 0.0001.

[1] We did not compare utilization between I-SNP and Medicare FFS beneficiaries, due to differences in the completeness of MA encounter data compared to Medicare FFS claims.

Table 4. Differences in Outcome Measures Between Similar I-SNP and Non-I-SNP MA Beneficiaries:

		Predicted Value* for I-SNP Beneficiaries	Predicted Value* for Similar Non-I-SNP MA Beneficiaries	Compared to similar Non-I-SNP MA beneficiaries, I-SNP beneficiaries...
Utilization	1+ ED Visit in the Month	4%	8%	were **53% less likely** to experience an ED visit each month
	1+ Hospitalization in the Month	5%	13%	were **57% less likely** to experience an inpatient stay each month
	1+ Readmission per Index Hospitalization	17%	24%	were **29% less likely** to experience a readmission in the 30 days after an inpatient stay
Quality	Pressure Ulcer	7%	10%	were **32% less likely** to experience pressure ulcers
	Infection	8%	10%	were **23% less likely** to experience infections
	Fall with Major Injury	0.29%	0.37%	were **20% less likely** to experience falls with major injury
	Antipsychotic Use	20%	19%	were **6% more likely** to be using antipsychotics
Spending	Total Part D Spend PMPM, Including Zeros	$748	$615	incurred **22% more** total Part D spending
	Total Part D Spend PMPM, Excluding Zeros	$750	$681	incurred **10% more** total Part D spending *(among those with any Part D spending)*

* Predicted values represent model outputs for an example beneficiary profile, to illustrate the regression-adjusted association between I-SNP enrollment and the outcome. Comparisons are reported if significant at the 5% level.

Table 5. Differences in Outcome Measures Between Similar I-SNP and Medicare FFS Beneficiaries:

		Predicted Value* for I-SNP Beneficiaries	Predicted Value* for Similar Medicare FFS Beneficiaries	Compared to similar Medicare FFS beneficiaries, I-SNP beneficiaries...
Quality	Pressure Ulcers	6%	8%	were **19% less likely** to experience pressure ulcers
	Infections	7%	9%	were **22% less likely** to experience infections
	Falls with Major Injury	0.3%	0.36%	were no more or less likely to experience falls with major injury
	Antipsychotic Use	17%	17%	were no more or less likely to be using antipsychotics
Spending	Total Part D Spend PMPM, Including Zeros	$800	$627	incurred **26% more** total Part D spending
	Total Part D Spend PMPM, Excluding Zeros	$762	$707	incurred **8% more** total Part D spending *(among those with any Part D spending)*

* Predicted values represent model outputs for an example beneficiary profile, to illustrate the regression-adjusted association between I-SNP enrollment and the outcome. Comparisons are reported if significant at the 5% level.

LIMITATIONS

We designed this analysis to mitigate key limitations to the extent possible. However, several inherent limitations remain, which could influence the interpretation of the observed outcomes of our regression analysis.

Confounders

One significant limitation of our analysis is the self-selection of Medicare beneficiaries into I-SNPs. Unlike a randomized controlled trial, this analysis relies on observational data where individuals choose to enroll in an I-SNP. Choosing to enroll in I-SNPs may correlate with certain relevant factors, such as living in certain geographic regions or residing in facilities where I-SNPs are prevalent or having a certain degree of cognitive function while in the nursing facility. Whereas Medicare FFS is available nationwide and MA is available in all but 68 counties (out of 3,244 total counties [or equivalents] and based on 2024 plan offerings),

I-SNPs serve a much smaller subset of counties, with more than 60% of U.S. counties lacking an I-SNP offering.[14, 15]

Our analysis controlled for numerous confounders at the individual and facility level. However, our analysis did not directly adjust for medical acuity (for instance, by using a beneficiary's Hierarchical Condition Category [HCC] risk score), though we controlled for the individual characteristics that may correlate with medical acuity, such as age, sex, extensive dependence in activities of daily living, cognitive function, and dual status.

Our multivariate regression design controls for differences in observable individual and nursing facility characteristics relevant to I-SNP enrollment and to one or more of the outcomes measured. For example, the regression model adjusts for demographics, physical and cognitive function, rural-urban geography, and nursing facility star ratings in our analysis. (See the full list of covariates in the **Measures** section.) Despite these adjustments, unobserved differences, such as medical acuity or the length of a long-term nursing facility stay, prevent making causal inferences.

Timing of I-SNP Member-Months

The timing of I-SNP enrollment and the hypothesized mechanism of I-SNP enrollment's effects pose another limitation. Residents can switch between plans monthly. To align outcomes with changing coverage amid a long-term nursing facility stay, our regression analysis attributed outcomes to each individual's Medicare coverage (I-SNP, FFS, or non-I-SNP MA) active in each month. However, this approach has limitations. Residents often enroll in an I-SNP only after entering a long-term nursing facility stay. Consequently, I-SNP member months may be disproportionately likely to occur later in a nursing facility stay, which could cause complex and unobserved differences between person-months covered by I-SNPs compared to the other two studied coverage types. Additionally, the effects of I-SNPs' care management may be lagged, taking time to reduce risks associated with outcomes. In our analysis, the lagged associations of one coverage type (for example, one without care management) could be attributed to the active coverage type (for example, one with more care management) in the months after a change of coverage. Future studies could leverage the timing of I-SNP enrollment differently to contribute additional evidence toward our research question.

Completeness of Data

Finally, the data used in our regression analysis, especially MA encounters and MDS records, depend on documentation submitted to CMS by plans and facilities, respectively, and may be incompletely documented. In that case, we may fail to detect all outcomes. We only used MA encounters to detect the incidence of events in acute care settings, which have higher

14 Freed, M., et al. Medicare Advantage 2024 Spotlight: First Look. KFF. Nov. 15, 2023.

15 Chen, A. C., Hnath, J. G. P., and Grabowski, D. C. Institutional Special Needs Plans In Nursing Homes: Substantial Enrollment Growth But Low Availability, 2006-21. Health Affairs. 2024;43(10).

MA encounter completeness than others.[16, 17] Because MA encounter data are generally less complete compared to Medicare FFS claims, we did not make direct comparisons between I-SNP and Medicare FFS outcomes detected by encounters or claims data.[17]

For the MDS, records relating to acuity or outcomes may be incorrectly documented, a limitation we assumed would be consistent across analysis populations. While the MDS generally measures outcomes quarterly for long-term nursing facility residents, some measures relied on assessment variables that only reflect the week(s) prior to the assessment. We applied the detection of an outcome in a quarterly MDS assessment to the prior three months, reflecting an assumption that the risk of an outcome is uniformly distributed throughout a quarter and that this would be consistent across analysis populations.

Implications of Limitations and Approaches to Mitigate Them

These limitations reflect the inherent complexity of assessing the causes of differences in healthcare outcomes in observational studies. As we designed this analysis to address key limitations inherent to the observational data used, this analysis provides important evidence to contribute to policy discussions about I-SNPs.

16 Yun, H., and Kosar, C. Examining the Completeness of Medicare Advantage Encounter Data for Measuring Post-Acute Care Utilization. Innovation in Aging. 2024;8(Supplement_1):1351-1352.

17 Assessing data sources for measuring health care utilization by Medicare Advantage enrollees: Encounter data and other sources. In: June 2024 Report to the Congress: Medicare and the Health Care Delivery System. MedPAC; 2024:93-134.

Potential Future Analyses

ATI's analysis identified differences in demographics, and functional and cognitive acuity across I-SNP, non-I-SNP MA, and Medicare FFS beneficiaries. Furthermore, our analysis found favorable associations between I-SNP enrollment and utilization and quality outcomes measures compared to non-I-SNP MA enrollment, and favorable associations between I-SNP enrollment and quality outcomes measures compared to Medicare FFS enrollment. Notably, we also found that I-SNP enrollment was generally associated with higher Medicare Part D spending than for beneficiaries enrolled in Medicare FFS or in a non-I-SNP MA plan.

While our analysis found largely positive first order outcome measure associations with I-SNP enrollment, our current analysis is unable to identify causal inference, the clinical significance of our results, the strength of the relationship between I-SNP membership and statistically significant outcomes measures (effect size analysis), or second order effects of the outcomes examined in this analysis.

ATI has identified five potential future analyses that would strengthen the impact and clinical utility of our findings.

1. **Clinical significance literature review:** Future analysis of outcome measures associated with I-SNP enrollment may consider incorporating a comprehensive literature review of established thresholds of clinically meaningful differences for each studied outcome measure. For outcome measures with established thresholds for clinical significance, the regression analysis could characterize utilization or quality analysis results as "clinically important."

2. **Effect size analysis:** ATI's regression analysis identified statistical significance for outcome measures associated with I-SNP enrollment but lacked the ability to characterize the strength of the relationship between I-SNP enrollment and outcome measures. A potential future effect size analysis would not only indicate if results were statistically significant but would also quantify the magnitude of impact of statistically significant findings to determine if the impact is meaningful on outcomes.

3. **Outcomes analysis:** Future outcomes analysis should not only consider first order outcomes measures but should also consider second order effects of significant outcomes measures. This potential future analysis would determine if observed differences in utilization or quality measures might impact other important measures. For example, avoided hospitalizations may also avoid a fatal event and reduce beneficiary mortality risk.

4 **Temporal analysis:** Future study could account for and leverage the timing of a person's entry into I-SNP, for example by analyzing only new enrollees in I-SNPs compared to similar Medicare FFS or non-I-SNP MA members who did not enroll in I-SNPs, or by analyzing only long-time enrollees who have many months of exposure to the same plan or coverage option at the start of the analysis period.

5 **Spillover effects analysis:** Receiving nursing facility treatment in a facility with high levels of I-SNP penetration may have spillover effects on all residents in the facility, including non-I-SNP residents. Researchers could classify facilities as "I-SNP facilities" or "non-I-SNP facilities" based on an established threshold of I-SNP penetration; this analysis would then leverage these cohorts to determine if relatively high I-SNP penetration in a facility has spillover effects on non-I-SNP residents in that same facility. A multi-level fixed-effects panel regression model would provide one methodology to explore this topic.

Policy Considerations

With a growing population of older adults in need of a nursing facility level of care, nursing facility quality and resident outcomes are a priority for policymakers. Recent state and federal policy efforts, as well as rulemaking by relevant agencies—such as CMS' final rule on minimum staffing standards for long-term care facilities, have focused on promoting access to quality care that has demonstrated positive outcomes for nursing facility residents. As policymakers seek to improve quality and outcomes for long-term care facility residents, policymakers may explore several policy considerations related to the I-SNP program.

I-SNP enrollment has continued to increase (7% total enrollment growth year-over-year from 2021 to 2024)

- **Assess Access to I-SNPs:** Given the correlation between I-SNP enrollment and long-term nursing facility resident outcomes, policymakers can explore the impact of expanding access to this program to more facilities and communities. While I-SNP enrollment has continued to increase over recent years (7% total enrollment growth year-over-year from 2021 to 2024), 2024 also saw a decrease in the total number of I-SNPs being offered and the number of Medicare Advantage Organizations (MAO) offering I-SNPs.[18] Some of this decrease in plan offerings is due to national organizations consolidating multiple plan offerings into one plan, in addition to national and regional organizations dropping I-SNPs and exiting the market. Furthermore, I-SNP availability is geographically limited: as of 2021, almost 70% of nursing facilities did not have any residents enrolled in I-SNPs, and more than 60% of U.S. counties had no I-SNP offerings available.[19]

  Given the changing dynamics in the I-SNP market, policymakers may wish to continue monitoring I-SNP plan offerings and enrollment and identify and consider factors that are causing decreases in I-SNP plan offerings and limited enrollment in and availability of I-SNPs. Policymakers might also consider whether it is in the best interest of long-term care facility residents to expand access to I-SNPs, and if the policy environment can facilitate that access. Additional analysis is necessary to determine if consolidation of enrollment into fewer I-SNP offerings and limited facility participation in I-SNPs negatively impacts beneficiary choice or outcomes, and if this consolidation requires any regulatory or policy remediation.

- **Investigate Medicare Part D Pharmaceutical Spending in I-SNPs:** Contrary to our hypothesis that I-SNPs would more effectively manage pharmaceutical use in nursing homes and lower drug spending, our analysis observed higher Medicare Part D spending among long-term nursing facility residents who are I-SNP beneficiaries compared to

18 Yeh, M., and Yen, I. Institutional special needs plans: 2024 market landscape and future considerations. Milliman. 2024.

19 Assessing data sources for measuring health care utilization by Medicare Advantage enrollees: Encounter data and other sources. In: June 2024 Report to the Congress: Medicare and the Health Care Delivery System. MedPAC; 2024:93-134.

Medicare FFS or MA non-I-SNP beneficiaries. As policymakers continue efforts to rein in the rising share of growing total healthcare expenditures driven by pharmaceutical costs, and as federal agencies, health plans, and beneficiaries plan for the anticipated impacts of the Inflation Reduction Act (IRA) that shift a larger portion of drug costs to Part D Plans, policymakers could further assess causes of higher drug spend in I-SNPs compared to other Medicare enrollment options.[20]

As unobserved patient complexity may drive this higher drug spend—rather than this being indicative of ineffective pharmaceutical management in I-SNPs—policymakers may wish to support additional research into drivers of drug spend among I-SNP beneficiaries to identify factors causing higher observed spend and to assess if these factors can be controlled for and addressed. Further analysis of outcome differences between provider-led versus payer-led I-SNPs may also help to inform policy. Based on these findings, policymakers may wish to support the development of programs or policies that can focus on reducing polypharmacy and promoting cost-effective prescribing practices in I-SNPs.

→ **Explore Beneficiary Outcomes in I-SNPs Compared to D-SNPs:** Many I-SNP eligible beneficiaries are also dual eligible individuals and are eligible to enroll in D-SNPs. Due to the coordination of Medicare and Medicaid benefits in D-SNPs and potential rich supplemental benefits packages provided by these plans, beneficiaries may be inclined to enroll in D-SNPs rather than I-SNPs. Policymakers and researchers may continue to explore potential differences in outcomes based on the type of Special Needs Plan in which an individual enrolls.

20 Berger, C., Engel, T., and Wanta, T. "Part D redesign under the Inflation Reduction Act." Milliman. 2023.

Conclusion

Our analysis shows a favorable association between I-SNP enrollment and certain healthcare utilization and quality outcomes for Medicare beneficiaries experiencing a long-term nursing facility stay. Across six out of eight studied measures, we observed better outcomes for I-SNP beneficiaries compared to Medicare FFS or to non-I-SNP MA, or both. Compared to non-I-SNP MA beneficiaries, I-SNP beneficiaries experienced lower rates of emergency department visits, hospitalizations, and 30-day readmissions. Additionally, we observed better outcomes in three of four studied quality indicators such as pressure ulcers, infections, and falls. We observed two unfavorable outcomes for I-SNP beneficiaries compared to Medicare FFS, non-I-SNP MA, or both: use of antipsychotic medications and Medicare Part D spending.

I-SNPs provide comprehensive Medicare healthcare services, an individualized plan of care, and care coordination by an ITC to I-SNP beneficiaries. This model may incentivize participating nursing facilities to effectively coordinate care, manage costs, and promote quality service delivery. Our findings provide an exploratory indication that I-SNP enrollment may be associated with better care in managing the complex healthcare needs of MA eligible long-term care residents, given positive observed outcomes across most measures included in our analysis. However, these findings do not allow causal inference; causal inference would require further investigation.

Future analyses of I-SNPs as outlined in this paper, such as effect size analysis, clinical significance evaluations, and spillover effect studies, would be crucial for deepening our understanding of I-SNPs' effects on care delivered in nursing facilities. These additional analyses could provide more granular insights into the magnitude and clinical relevance of observed outcomes, as well as the broader influence I-SNPs may have on nursing facility environments. Such analyses could identify the mechanisms of I-SNP care management that drive specific improvements and could inform policy decisions to optimize care for the complex needs of individuals who may be served by I-SNPs.

Our findings provide an exploratory indication that I-SNP enrollment may be associated with better care in managing the complex healthcare needs of Medicare eligible long-term care residents.

Appendices

DATA TABLES:

Table 6. Differences in Resident Age

Age Group	I-SNP	FFS	Non-I-SNP MA	Relative Difference: I-SNP vs FFS	Relative Difference: I-SNP vs Non-I-SNP MA
Younger than 65	5,495 13.2%	58,102 10.9%	20,801 10.2%	20.8%	29.5%
Younger than 55	1,402 3.4%	17,224 3.2%	5,406 2.6%	3.9%	27.1%
55-64	4,093 9.8%	40,878 7.7%	15,395 7.5%	27.9%	30.3%
65 and Older	36,262 86.8%	475,145 89.1%	183,839 89.8%	-2.5%	-3.3%
65-74	11,808 28.3%	130,746 24.5%	52,625 25.7%	15.3%	10.0%
75-84	13,326 31.9%	162,359 30.4%	68,135 33.3%	4.8%	-4.2%
85 and Older	11,128 26.6%	182,040 34.1%	63,079 30.8%	-21.9%	-13.5%
Total Long-Stay Residents	41,757 100%	533,247 100%	204,640 100%	N/A	N/A

Note: Tables 7-10 analyze individuals 65 and older only.

Table 7. Differences in Resident Race and Ethnicity among Individuals 65 and Older

Race/Ethnicity	I-SNP	FFS	Non I-SNP MA	Relative Difference: I-SNP vs FFS	Relative Difference: I-SNP vs Non-I-SNP MA
American Indian and Alaska Native (AIAN)	95 0.3%	2,773 0.6%	577 0.3%	-55.1%	-16.5%
Asian and Pacific Islander (API)	438 1.2%	11,528 2.4%	3,274 1.8%	-50.2%	-32.2%
Black	7,596 20.9%	65,800 13.8%	28,496 15.5%	51.3%	35.1%
Hispanic/Latino	2,533 7.0%	32,938 6.9%	12,262 6.7%	0.8%	4.7%
White	25,230 69.6%	355,909 74.9%	137,102 74.6%	-7.1%	-6.7%
Other	370 1.0%	6,197 1.3%	2,128 1.2%	-21.8%	-11.9%
Total Long-Stay Residents, Age 65+	36,262 100%	475,145 100%	183,839 100%	N/A	N/A

Table 8. Differences in Resident Dual Eligibility and Medicaid Status among Individuals 65 and Older

Dual Eligibility	I-SNP	FFS	Non-I-SNP MA	Relative Difference: I-SNP vs FFS	Relative Difference: I-SNP vs I-SNP vs Non- I-SNP MA
Dual Overall	34,644 95.5%	354,569 74.6%	137,185 74.6%	28.0%	28.0%
Full Dual	34,367 94.8%	348,937 73.4%	133,576 72.7%	29.1%	30.4%

Partial Dual	277 0.8%	5,632 1.2%	3,609 2.0%	-35.6%	-61.1%
Medicare Only	1,618 4.5%	120,576 25.4%	46,654 25.4%	-82.4%	-82.4%
Total Long-Stay Residents, Age 65+	36,262 100%	475,145 100%	183,839 100%	N/A	N/A

Table 9. Differences in Extensive Dependence in ADLs among Individuals 65 and Older

Extensive Dependence in ADL	I-SNP	FFS	Non-I-SNP MA	Relative Difference: I-SNP vs FFS	Relative Difference: I-SNP vs I-SNP vs Non-I-SNP MA
Bed Mobility	24,085 66.5%	319,752 67.4%	125,619 68.4%	-1.3%	-2.9%
Dressing	25,816 71.3%	342,252 72.1%	132,161 72.0%	-1.1%	-1.0%
Eating	6,168 17.0%	86,297 18.2%	28,295 15.4%	-6.4%	10.4%
Locomotion on Unit	16,268 44.9%	238,154 50.2%	90,615 49.4%	-10.5%	-9.0%
Personal Hygiene	24,389 67.3%	318,835 67.2%	122,104 66.5%	0.2%	1.2%
Toileting	26,389 72.8%	348,861 73.5%	135,416 73.8%	-0.9%	-1.3%
Transfer	21,463 59.2%	295,970 62.4%	114,435 62.3%	-5.0%	-5.0%

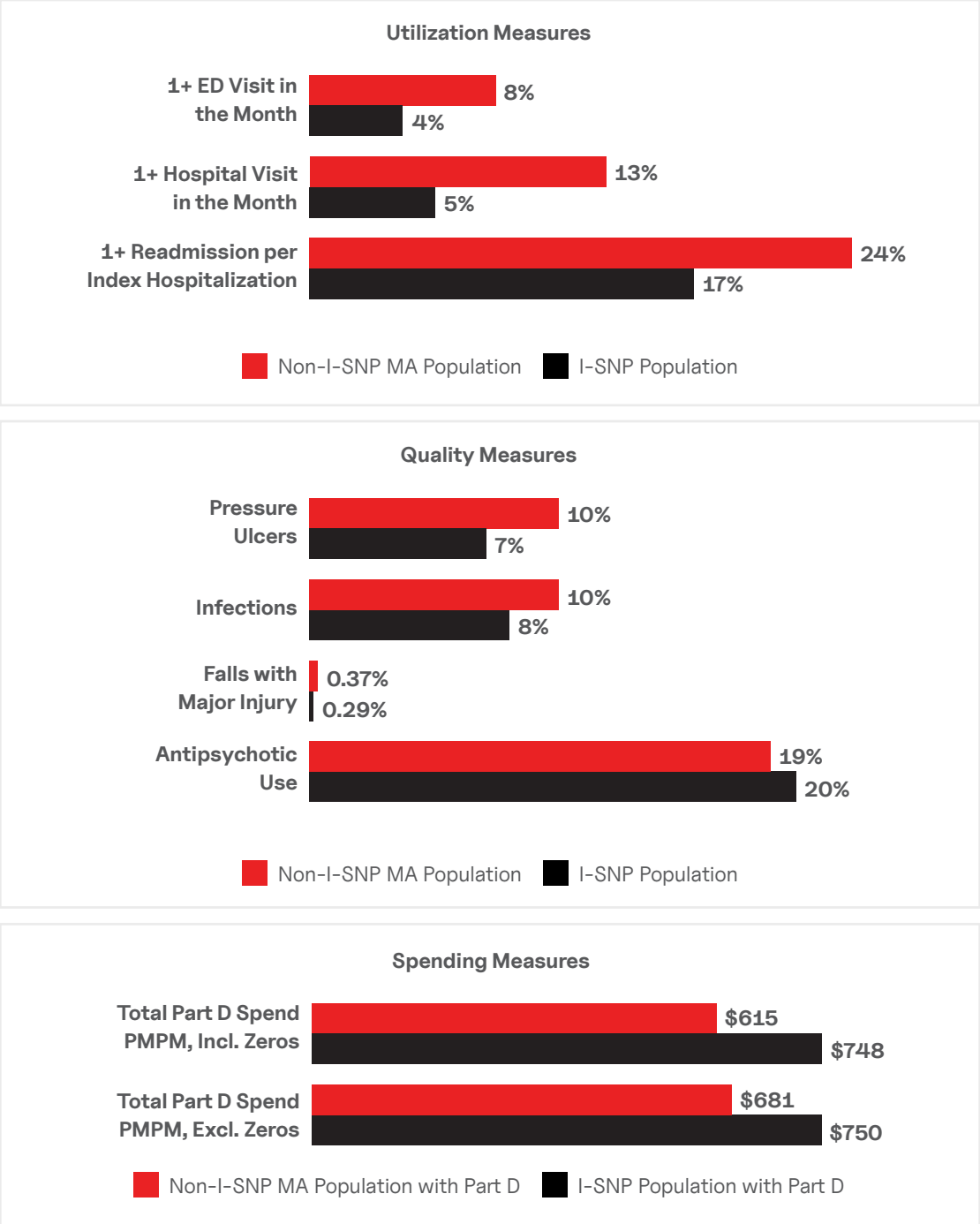
Due to differences in the response rate across questions about each ADL, the totals for each measure are slightly different across measures.

Table 10. Differences in Resident Cognitive Status and Level of Impairment among Individuals 65 and Older

Cognitive Function Scale (CFS)	I-SNP	FFS	Non-I-SNP MA	Relative Difference: I-SNP vs FFS	Relative Difference: I-SNP vs Non-I-SNP MA
Cognitively Intact	5,137 14.2%	112,488 23.7%	47,635 25.9%	-40.2%	-45.3%
Mild Cognitive Impairment	17,230 47.5%	172,822 36.4%	72,570 39.5%	30.6%	20.4%
Moderate Cognitive Impairment	9,419 26.0%	141,324 29.7%	47,696 25.9%	-12.7%	0.1%
Severe Cognitive Impairment	4,476 12.3%	48,511 10.2%	15,938 8.7%	20.9%	42.4%
Total Long-Stay Residents, Age 65+	36,262 100%	475,145 100%	183,839 100%		

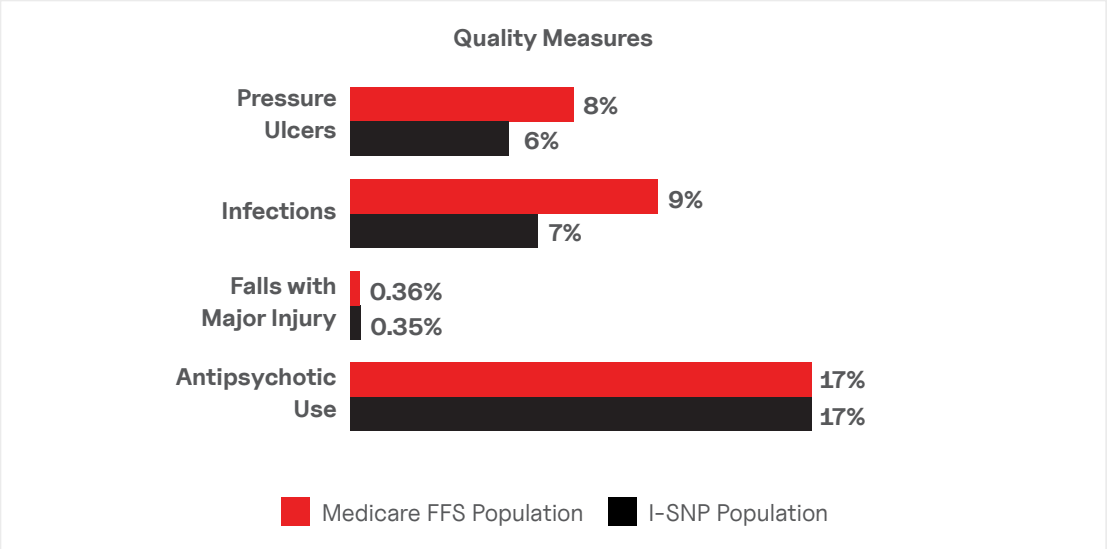
DATA VISUALIZATIONS

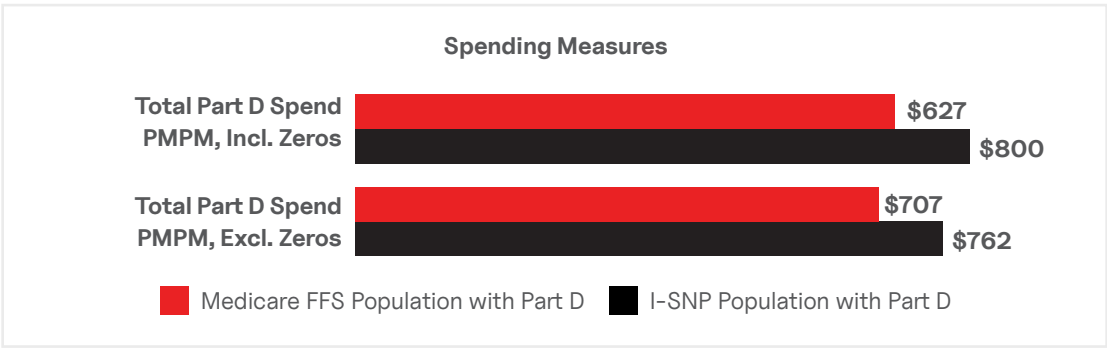
Figure 2. Differences in Outcome Measures between I-SNP and Non-I-SNP MA Beneficiaries[21]



21 Source: ATI Advisory analysis of CMS MBSF, MA Encounters, and MDS data for 2022 among Medicare beneficiaries during months in 2022 coinciding with a long-term nursing facility stay. Incidence and spending rates reflect the predicted values for an example I-SNP member profile. Regressions adjust for demographics, dual eligibility, functional and cognitive acuity, and facility traits. Chart bars are grayed out if the coefficient associated with I-SNP enrollment (relative to non-I-SNP MA enrollment) was statistically significant at the 5% level, based on Wald tests. (No bars are grayed out in Figure 3.) For more detail, see the Regression Methodology section.

Figure 3. Differences in Outcome Measures between I-SNP and Medicare FFS Beneficiaries[22]





22 Source: ATI Advisory analysis of CMS MBSF and MDS data for 2022 among Medicare beneficiaries during months in 2022 coinciding with a long-term nursing facility stay. Incidence and spending rates reflect the predicted values for an example beneficiary profile. Regressions adjust for demographics, dual eligibility, functional and cognitive acuity, and facility traits. Chart bars are grayed out if the coefficient associated with I-SNP enrollment (relative to Medicare FFS enrollment) was statistically significant at the 5% level, based on Wald tests. For more detail, see the Regression Methodology section.

ATI Advisory

About ATI Advisory

ATI Advisory is a healthcare research and advisory services firm dedicated to system reform that improves health outcomes and makes care better for everyone. ATI guides public and private leaders in solving the most complex problems in healthcare through objective research, deep expertise, and bringing ideas to action. For more information, visit atiadvisory.com.