Evaluation of the Accountable Care Organization Investment Model

AIM Impacts in the First Performance Year

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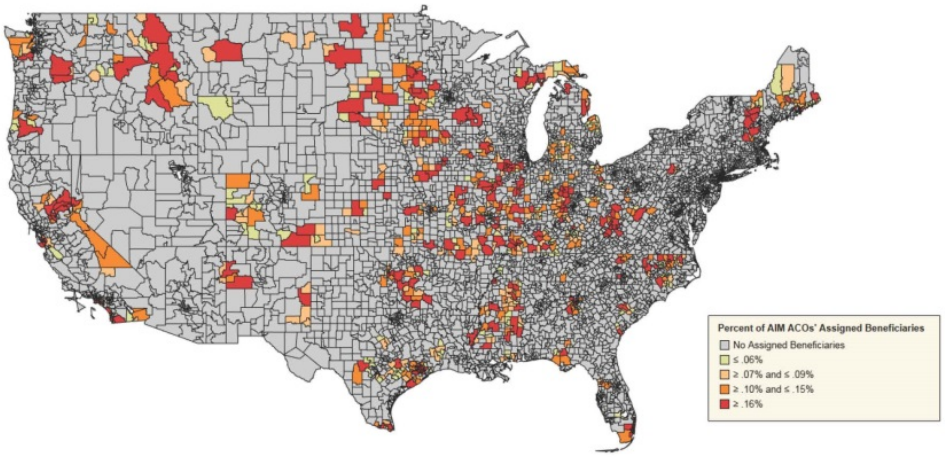
ACO Investment Model in the First Performance Year

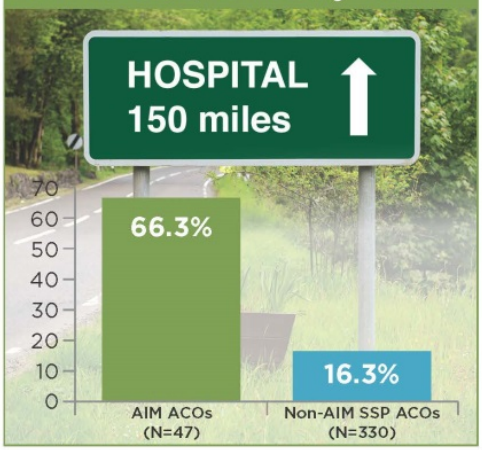
The Accountable Care Organization (ACO) Investment Model (AIM) operates under the Shared Savings Program (SSP), providing up-front funding to encourage:

- New ACOs to form in low-ACO penetration or rural areas (Test 1)
- Existing smaller ACOs to continue participation and assume downside financial risk (Test 2)

47 AIM ACOs: 36 States, 420,000 Medicare Beneficiaries, 12,800 health care providers



AIM ACOs are Mostly Rural[a]



AIM Test	AIM Funds
Test 1: 41 ACOs	$250,000 + $36 per beneficiary + $8 per beneficiary per month
Test 2: 6 ACOs[b]	$36 per beneficiary + $6 per beneficiary per month

Total AIM Funds Spent[c]

$58,340,797

Total ACO-Internal Funds Spent[c]

$104,316,688

Total Funds Spent by AIM ACOs[c]

$162,657,486

ACOs spent the most on:

- Care management
- Technology
- Administrative functions

AIM ACOs Reduced Medicare Spending in First Performance Year

Test 1 AIM ACOs vs. Local Market Beneficiaries (N=41)[d]

	PBPM Spending	Aggregate Spending (Millions)	Percent of Base Spending[e]
95% CI	**-$22.7** (-$30.3 to -$15.1)	**-$105.4** (-$140.8 to -$70.0)	**-2.2%** (-2.9% to -1.5%)

Test 2 AIM ACOs vs. Non-AIM SSP ACOs (N=6)[i]

	PBPM Spending	Aggregate Spending (Millions)	Percent of Base Spending[e]
95% CI	-$62.3 (-$134.7 to $10.0)	-$27.0 (-$58.3 to $4.3)	-4.1% (-8.9% to 0.7%)

PBPM = per-beneficiary-per-month; **Aggregate** = total reductions over all beneficiaries and months; **Tot. Exp.** = Total Medicare Expenditures; **CI** = Confidence Interval

Reported statistics are based on averages across individual ACOs.

TEST 1 NET SAVINGS TO THE MEDICARE PROGRAM:
-$82.8M (-1.7%)[f]
95% CI: (-$118.2M to -$47.5M) (-2.5% to -1.0%)

Test 1 AIM ACOs:

- ACOs with relatively lower spending had beneficiaries with fewer acute inpatient visits (including 30-day readmissions and ASC admissions), fewer SNF days, and less chance of visiting the ED.[g]
- 24% (10 ACOs) earned shared savings, totaling $22.6M[h]

Test 2 AIM ACOs:

- Aggregate estimated reductions in Medicare spending not statistically different from zero at the 5% level
- 67% (4) earned shared savings ($2.4M/ACO); 39.4% (28) comparable non-AIM SSP ACOs (71) earned shared savings ($1.4M/ACO)[h]

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Footnotes

[a] ACO rurality is measured by the percentage of an ACO's assigned beneficiaries living in areas with Rural Urban Commuting Area (RUCA) Codes ≥ 4. RUCA codes range from 1 to 10, with 10 indicating most rural. RUCA score of 4 indicates an area that is a Micropolitan area core: primary flow within an Urban Cluster of 10,000 to 49,999. For more information on RUCA Codes, see https://www.hrsa.gov/rural-health/about-us/definition/index.html.

[b] Two ACOs exited AIM (and Shared Savings Program) at the end of 2015.

[c] Data source is expense reports submitted by AIM ACOs. Figures include AIM spending reported through quarter 3 of 2017 and excludes two Test 2 AIM ACOs that exited Shared Savings Program at the end of 2015. Spending is self-reported and ACO internal spending is used to support purchases made by AIM funds.

[d] Test 1 results were estimated from a difference-in-differences model applied to each AIM ACO and averaged across ACOs.

[e] Base spending represents total Medicare spending by AIM ACO beneficiaries during the baseline period net of the change in total Medicare spending of non-ACO fee-for-service beneficiaries between baseline and performance years in ACO markets.

[f] Net Savings to the Medicare program was calculated by subtracting earned shared savings through 2016 from Aggregate Spending. Earned shared savings did not remove recouped AIM funds since not all AIM funds had been distributed by the end of 2016.

[g] SNF = skilled nursing facility; ASC = ambulatory care sensitive conditions; ED = emergency department

[h] Source: SSP financial results for 2016

[i] Test 2 results are estimated from a difference-in-differences model applied to each Test 2 AIM ACO compared with non-AIM SSP ACOs in the same SSP start cohort, financial risk track, and approximate size, and averaged across ACOs.

1. Executive Summary

A range of alternative payment models have been established under the Affordable Care Act to help transform the traditional Medicare program from volume-based to value-based payment for medical care. Yet transformation of care to a more value-based delivery model has been occurring unevenly across the nation. To help encourage more even growth of care transformation for beneficiaries, the Centers for Medicare & Medicaid Services (CMS) developed the Accountable Care Organization (ACO) Investment Model (AIM) as part of the Medicare Shared Savings Program (SSP). Under this program, groups of providers can form an ACO, which is responsible for the cost and quality of care of the population of fee-for-service (FFS) Medicare beneficiaries who predominantly receive care from the ACO providers.

ACOs participating in the Shared Savings Program receive a portion of the savings they generate relative to a benchmark Medicare spending level. AIM provides up-front payments to participating SSP ACOs, which are paid back to CMS through these earned shared savings from the Shared Savings Program. AIM payments assist SSP ACOs at different points in their evolution through funding for investments in infrastructure or staffing. Some AIM ACOs participated in the Shared Savings Program prior to AIM and others started their participation in both initiatives simultaneously.

AIM had two main goals: establish SSP ACOs in geographic areas with few ACOs (known as Test 1); and provide existing, smaller ACOs with the resources to sustain participation in the Shared Savings Program and transition to a two-sided financial risk track, wherein they would be at risk of paying CMS for Medicare spending above their benchmark (known as Test 2).

CMS contracted with Abt Associates and its partners, L&M Policy Research, Insight Policy Research, and an external ACO expert, to design and conduct an evaluation of AIM. The evaluation examines how the infusion of capital from AIM payments affects operations and outcomes of SSP ACOs participating in AIM. Specifically, the evaluation addresses three main areas of investigation:

- *ACO formation, risk-taking, and sustainability*: The evaluation determines if AIM was successful in its goals of encouraging new ACOs to form in areas with low ACO penetration as well as sustaining existing smaller-sized SSP ACOs' participation and increasing their willingness to accept two-sided financial risk.
- *Participant experiences*: The evaluation describes who AIM participants are, their reasons for seeking AIM funds, how they use those funds to achieve their care transformation goals, and their perceptions and experiences from participating in AIM.
- *Impacts on health care*: The evaluation assesses whether AIM impacted the care of beneficiaries attributed to AIM ACOs on a set of health care cost, utilization, and quality measures that address the CMS priorities of better care, healthier people, and smarter spending for Medicare beneficiaries.

This report focuses on introducing AIM and evaluating the participating ACOs' first performance year in AIM. Future reports will incorporate and synthesize these and subsequent year findings with information gleaned from ACO leadership and clinician interviews as well as ACO surveys on implementation, effectiveness, and sustainability.

Summary of Key Findings

Who are AIM ACOs?

- Forty-seven AIM ACOs began participation in AIM: four SSP ACOs started on April 1, 2015, and 43 SSP ACOs started on January 1, 2016. Of these 47 AIM ACOs, 41 were Test 1 AIM ACOs (intended to encourage ACO formation in rural, low-ACO penetration areas), and six were Test 2 AIM ACOs (intended to sustain ACO participation for smaller ACOs and encourage movement to a two-sided financial risk track). Two Test 2 AIM ACOs ending their participation in the Shared Savings Program after their first AIM performance year. Across the 47 AIM ACOs, there were 12,800 health care providers serving 420,000 Medicare FFS beneficiaries located in 36 states.[1] All AIM ACOs began in the upside-only financial risk track, so they were not liable for any spending above their shared savings benchmark.
- Test 1 AIM ACOs were primarily located in rural and underserved areas. On average, 75.9 percent of beneficiaries assigned to Test 1 AIM ACOs resided in a rural area, 15.1 percent resided in a health professional shortage area for primary care, and 71.3 percent resided in a health professional shortage areal for mental health care. Most Test 1 AIM ACOs were composed of small hospitals, federally qualified health centers (FQHCs), and rural health clinics (RHCs), and they each served an average of 9,439 assigned beneficiaries. Many Test 1 AIM ACOs had relationships with management companies that helped to form and operate the ACOs.
- Relative to Test 1 AIM ACOs, Test 2 AIM ACOs were located in more urban areas and tended to serve populations vulnerable to problems with access to care, including those with a higher prevalence of Hispanic beneficiaries, beneficiaries dually eligible for Medicare and Medicaid, and those who were high cost. Test 2 AIM ACOs were small, each serving on average 5,753 beneficiaries.
- At the time of shared savings reconciliation for the 2016 performance year, AIM ACOs had received $80,399,048 in dispersed AIM funds. Thirteen AIM ACOs have earned some shared savings, and a total of $19,120,603 has been recouped by CMS, or 23.8 percent of dispersed AIM funds.

What were the impacts of Test 1 AIM ACOs?

We compared beneficiaries in Test 1 AIM ACOs to non-ACO FFS beneficiaries in their markets to assess the overall impact of Test 1 AIM ACOs. Since Test 1 AIM ACOs were new SSP ACOs, this comparison appropriately estimates the effect of AIM assuming these ACOs would not have formed without AIM. Using a differences-in-differences (DID) evaluation framework, we found evidence that Test 1 AIM ACOs had lower spending in their first performance year. We estimated reduced spending for 30 AIM ACOs (eight ACOs with statistically significant reduced spending, $P<0.05$) and greater spending for 11 AIM ACOs (no ACOs with statistically significant greater spending, $P<0.05$). When aggregating across ACOs, we found average spending reductions of -$22.70 per beneficiary per month compared to non-

[1] These figures represent the evaluation team's analytic sample, which incorporates several data cleaning steps described in this report and appendix.

ACO FFS beneficiaries located in ACO markets. In aggregate, reduced spending was $105.4 million for the first AIM performance year, representing a 2.2 percent reduction in base Medicare spending.[2]

- Estimated reductions in total Medicare spending were supported by findings for other spending and utilization measures. Generally, we found decreases in spending for costly medical care such as acute hospitalizations among AIM ACO beneficiaries compared to their comparison group. We also found decreases in the number of hospitalizations, emergency department visits, and observation stays. We did not find decreased physician spending and we found some evidence of increases in office-based physician visits and use of tests. We note that these are overall patterns across the 41 Test 1 AIM ACOs, with variation in these findings across ACOs.

- Ten Test 1 AIM ACOs earned shared savings according to the financial reconciliation in the 2016 performance year, totaling $22.6 million. After subtracting the $22.6 million in earned shared savings from aggregate reductions in spending, net savings to the Medicare program was approximately -$82.8 million in the first AIM performance year. These savings represented 1.7 percent in base Medicare spending.[2]

How did the performance of Test 2 AIM ACOs compare to non-AIM SSP ACOs?

- Since Test 2 ACOs were existing SSP ACOs, we compared beneficiaries assigned to Test 2 AIM ACOs to beneficiaries assigned to similar non-AIM SSP ACOs using a DID evaluation framework. We calculated an aggregate and non-statistically significant estimate of -$62.3 in per beneficiary per month spending reductions compared with non-AIM SSP ACOs. One Test 2 AIM ACO had large statistically significant decreases in spending compared to comparable non-AIM SSP ACOs; this ACO also generated large shared savings from financial reconciliation in the same year.

- We did not find clear patterns of increases or decreases among the other spending and utilization performance measures between Test 2 AIM ACOs and comparable non-AIM SSP ACOs. Test 2 AIM ACOs performed better on the preventive health domain of ACO quality measures; however, they performed worse for some ACO quality measures in the domain of at-risk populations.

- Four of the six Test 2 AIM ACOs (66.7 percent) earned shared savings according to financial reconciliation in their first AIM performance year. The average amount of earned shared savings across the six Test 2 AIM ACOs was $2.4 million per ACO. In contrast, only 28 out of 71 (39.4 percent) of comparable non-AIM ACOs earned shared savings, and they had lower savings at an average of approximately $1.4 million.

Did AIM ACOs increase the use of care management and wellness visits?

We assessed the use of annual wellness visits, chronic care management visits, and transitional care management services for beneficiaries assigned to AIM ACOs relative to FFS beneficiaries in the ACOs' markets. Despite beginning with higher rates of this utilization, beneficiaries assigned to AIM ACOs had higher percentage increases in the rate of annual wellness visits (40 percent versus 28 percent) and transitional care management services (60 percent versus 43 percent) from 2015 to 2016 (the first performance year for most AIM ACOs). Although beneficiaries in the ACOs' markets experienced a slightly higher percentage increase in the rate of chronic care management visits, AIM ACO beneficiaries

[2] Base spending represents total Medicare spending by AIM ACO beneficiaries during the baseline period net of the change in total Medicare spending of non-ACO FFS beneficiaries between baseline and performance years in ACO markets.

still had higher rates of this service type in 2016 (122 versus 118 visits per 1,000 beneficiary years). Although these increases in utilization were not surprising since they can enhance primary care for beneficiaries attributed to ACOs, ACOs may be also increasing their use as part of an overall strategy to increase revenues while boosting the likelihood of beneficiary retention in the ACO the following year.

How did AIM ACOs spend their AIM payments?

AIM expense reports provide a rich source of information on how AIM ACOs spend AIM payments as well as their own internal funds to achieve their care transformation goals. Through the third quarter of 2017, AIM ACOs reported expenses for $58,340,797 in AIM payments and an even greater amount of their own internal funds to support care transformation ($104,316,688). The greatest amount of overall spending was on administrative and executive activities, information technology (IT), and care management activities such as hiring nurses to coordinate patients' care. We found substantially lower spending on education/training and additional care redesign programs. Most AIM ACOs used management companies (36 of 45 ACOs), and these ACOs had higher levels of spending than independent ACOs across all expense report categories because of greater investment of their internal funds, especially for administrative and executive functions. In addition, spending on contracted labor (hiring outside services) was highest among administrative and executive activities. Given that most AIM ACOs were rural and small, high administrative and executive costs, as well as high IT costs, may indicate that AIM ACOs were ramping up the management and IT infrastructure needed to meet their care transformation goals. An area for further investigation is whether these investments are sustainable and lead to long-term improvements in practice patterns.

2. Overview of AIM and the AIM Evaluation

AIM is a type of Medicare model supporting certain Shared Savings Program ACOs through two model tests: Test 1 provides up-front AIM payments to new SSP ACOs to encourage formation in low-ACO penetration areas, and Test 2 provides up-front AIM payments to existing ACOs to encourage their continued participation and assist them to move to a two-sided risk track where they are financially at risk for the Medicare spending above their benchmark spending level. AIM payments are used to fund care transformation activities and investments. The payments are recouped over time from shared savings earned by the ACO while it participates in the Shared Savings Program. In this chapter, we describe eligibility criteria and the structure of AIM funds as well as provide an overview of the evaluation design and the organization of this report.

2.1 AIM Background

To participate in AIM, ACOs had to meet certain eligibility criteria (see **Exhibit 2-1**):

- Needed to be SSP ACOs in good standing:
  - Was accepted into and participates in the Shared Savings Program.
  - Had a minimum of 5,000 assigned beneficiaries.
  - Completely and accurately reported quality measures in the Shared Savings Program in the most recent performance year if the ACO started in the Shared Savings Program in 2012, 2013, or 2014. This requirement did not apply for ACOs starting in 2015 or 2016.
- Demonstrated that they were smaller ACOs or located in a rural area:
  - Had a preliminary prospective beneficiary assignment of 5,000 to 10,000 beneficiaries in its first AIM participation year. If an AIM ACO started the Shared Savings Program in 2015 or 2016 and was deemed rural according to whether at least 65 percent of its physician practice ZIP Codes have a Rural Urban Commuting Area (RUCA) Code value of 4-10 when it applied to AIM, it may have more than 10,000 beneficiaries.
  - Did not include a hospital as an ACO provider/supplier, as defined by the SSP regulations, unless the hospital was a critical access hospital (CAH) or inpatient prospective payment system (IPPS) hospital with 100 or fewer beds.
  - Not owned or operated in whole or in part by a health plan.
  - Did not participate in the AP ACO Model according to the parent Tax Identification Number (TIN) of any practices that participated in the AP model. The AP model also provided up-front funding to ACOs.

Exhibit 2-1: AIM Eligibility Criteria

	Test 1 (New SSP Starters)	Test 2 (Existing ACOs)
ACO start date	• SSP – 2015, 2016	• SSP – 2012, 2013, 2014
Size	• 10,000 or fewer assigned beneficiaries unless located in a designated rural area at the time of application	• 10,000 or fewer assigned beneficiaries at the time of application
	• Provider-based with exception of ACOs containing CAHs or small IPPS hospitals (100 beds or fewer)	
Prior ACO performance	• None	• Successfully report SSP quality measures
Other	• Not owned by a health plan • Did not participate in the Advance Payment ACO Model	

AIM applicants were assessed on the thoroughness of their submitted spend plans for the use of AIM funds, willingness to take on two-sided financial risk, and demonstration of financial need for AIM funds. Test 1 AIM applicants were also scored on criteria designed to encourage new ACOs to form in rural and low-ACO penetration areas. For Test 2 AIM applicants, preference was given to ACOs that provided high quality of care, historically spent less than their financial benchmark, and committed to moving to a two-sided risk track. Application scoring criteria is listed in **Appendix 2A**.[3]

AIM Test 1 provided start-up financial support to ACOs that began their first SSP agreement period in 2015 or 2016. Participating organizations received an up-front fixed payment of $250,000, an up-front variable payment of $36 for each assigned beneficiary, and a monthly payment of $8 for each assigned beneficiary for 24 months. AIM Test 2 offered financial support to ACOs that began their SSP agreement period in April 2012, July 2012, January 2013, or January 2014. Participating organizations received the same up-front variable payment of $36 for each assigned beneficiary, a smaller monthly payment of $6 for each assigned beneficiary for 24 months, and no up-front fixed payment. Differences in AIM payments between Test 1 and Test 2 ACOs are summarized in **Exhibit 2-2**.

Exhibit 2-2: AIM Payments

AIM	Up-front	Monthly	Eligibility
Test 1	$250,000 + $36 per beneficiary	$8 per beneficiary per month	New ACOs (2015, 2016)
Test 2	$36 per beneficiary	$6 per beneficiary per month	Existing ACOs (2012, 2013, 2014)

AIM payments are recouped by CMS from any shared savings generated by AIM ACOs. Although AIM funds are only distributed over 24 months, they are recouped for up to two three-year SSP participation agreement periods, if the ACO decides to renew its agreement. Test 2 AIM ACOs are required to re-pay their AIM payments if they are not recouped before the end of their participation agreement; they must therefore have financial guarantees to participate in AIM. Test 1 AIM ACOs that do not generate enough shared savings for CMS to recoup their AIM payments by the end of their first or second participation agreement have the remaining balance forgiven if the ACO does not renew to start a third participation agreement. Under both Test 1 and 2, ACOs that otherwise terminate participation in the Shared Savings Program are required to re-pay any remaining AIM payments.

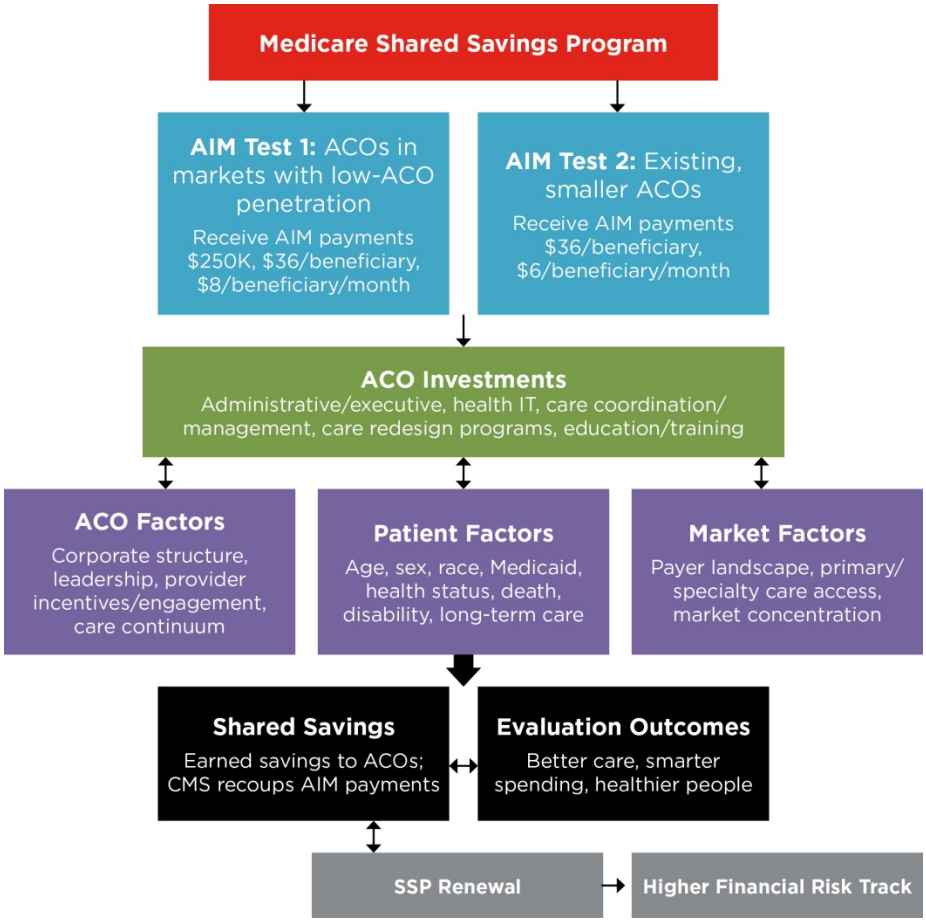
[3] Accountable Care Organization Investment Model (AIM) Request for Applications (https://innovation.cms.gov/Files/x/AIM-RFA.pdf)

***Beneficiary Assignment to SSP ACOs*:** Beneficiary assignment to AIM ACOs is determined by the SSP ACO beneficiary assignment algorithm. Beneficiaries who meet certain Medicare coverage and geographic criteria during the year may be assigned to an ACO depending upon the provider(s) from whom they received primary care services. An eligible beneficiary receiving the plurality of his or her primary care services from an ACO's providers in a year would be assigned to that ACO for that year. Data sources used in determining assignment are described in **Appendix 2B** and further description of the SSP ACO assignment algorithm and our application of the algorithm is provided in **Appendix 2C**.

2.2 AIM Evaluation Overview

The AIM evaluation is founded upon a conceptual framework of how AIM funds can be invested by the ACO to reach the goals of shared savings, SSP renewal (potentially with a higher financial risk track), and ultimately, better care, healthier people, and smarter spending (**Exhibit 2-3**).

Exhibit 2-3: AIM Conceptual Framework



Source: Developed by the AIM evaluation team

The rest of this chapter provides a brief overview of the quantitative evaluation design for estimating impacts in the first performance year of AIM participation and ends with the organization of this report. Future analyses will integrate findings on implementation, effectiveness, and ACO and clinical perspectives gleaned from our primary data collection efforts.

2.2.1 Overview of Comparison Groups and Baseline Years

The construction of robust comparison groups and baseline years are essential to the quasi-experimental research design we use to evaluate AIM impacts. Comparison groups allow the evaluation to produce the best estimate of the change in outcomes that would have occurred in the absence of AIM. By comparing changes in outcomes from baseline to performance years among AIM ACOs to changes in outcomes from baseline to performance years for the ACOs' comparison groups, we can learn which changes were due to AIM rather than external factors.

Since Test 1 and Test 2 AIM ACOs were selected for AIM with different goals in mind, we used different methods for generating the appropriate comparison groups. The evaluation comparison group for Test 1 AIM ACOs consists of assignment-eligible Medicare fee-for-service (FFS) beneficiaries located in each AIM ACO's market; as newer ACOs, Test 1 AIM ACOs should be compared against FFS beneficiaries not assigned to an ACO. In contrast, the evaluation comparison group for Test 2 AIM ACOs consists of beneficiaries assigned to similar existing non-AIM SSP ACOs to measure the incremental effect of AIM funds on SSP ACO performance.

The first performance year was 2016 for most AIM ACOs and 2015 for four AIM ACOs, which were all Test 2 AIM ACOs.

***Test 1 AIM ACOs, Non-ACO FFS Market Comparison Group*:** Beneficiaries who were eligible for assignment to an SSP ACO but not attributed to any Medicare ACO composed a comparison group of eligible FFS Medicare beneficiaries located within each ACO's market. This group is relevant for Test 1 AIM ACOs that may not have joined the Shared Savings Program in the absence of AIM because impacts estimated with this group would represent the overall effect of AIM ACO in relation to a counterfactual world with no Medicare ACOs. The use of markets ensures that comparison beneficiaries face the same market forces as beneficiaries assigned to AIM ACOs, such as the availability of different types of care (e.g., post-acute care or hospice care), availability of other payers, provider characteristics, and the provider environment. Moreover, local comparison groups control for geographic differences in Medicare reimbursement rates and for any changes in unobservable factors causing market-wide changes in spending or quality.

We define markets based on Primary Care Service Areas (PCSAs) where each AIM ACO's assigned beneficiaries reside.[4] PCSAs are designed to delineate discrete geographic areas where residents generally seek primary care from the same providers, defined using Medicare claims data.[5] There are 6,542 PCSAs compared with approximately 3,000 counties nationwide. These relatively small geographic areas, defined based on the use of primary care resources, are well suited for delineating ACO markets.

***Test 2 AIM ACOs, Non-AIM SSP Comparison Group*:** To better understand the effect of AIM payments separate from the effect of participating in the Shared Savings Program, we used similar non-AIM SSP ACOs as a comparison group for Test 2 AIM ACOs. For each Test 2 AIM ACO, we selected non-AIM SSP ACOs that started the Shared Savings Program at the same time, participated in Track 1 (no downside financial risk), did not participate in the AP ACO Model, and were of similar size in terms of number of assigned

[4] Developed by the Dartmouth Atlas, PCSAs are constructed by aggregating ZIP Code Tabulation Areas (ZCTAs) together that reflect Medicare patient travel times to primary care providers. We required at least 0.5 percent of an ACO's assigned beneficiaries to reside in a specific PCSA for it to be included in its market. Without censoring geographic areas with only a few beneficiaries, we would see a small number of assigned beneficiaries residing in nearly all 50 states for each ACO.

[5] Goodman, D, Chang, C, Shipman, S (2011) "Primary Care Service Areas" https://www.hrsa.gov/advisorycommittees/shortage/Meetings/20110118/MeetingMaterials/primarycare.pdf (accessed May 25, 2018).

beneficiaries. This comparison examines the incremental effect of AIM payments conditional on participation in the Shared Savings Program, but it is important to note that non-AIM SSP ACOs likely differ from AIM ACOs in ways that cannot be fully observed or accounted for and resulting differences should be interpreted cautiously.

***Baseline Years*:** To capture trends pre-dating the beginning of AIM, two or three baseline years were constructed, depending on participation in Test 1 or 2. For Test 1 AIM ACOs, the baseline years included FFS beneficiaries who would have been assigned in each of three baseline years to ACO providers from the first performance year. For Test 2 AIM ACOs, the two baseline years included FFS beneficiaries actually assigned to each ACO prior to participation in AIM. Comparison group baseline years had the analogous construction as in the performance year for Test 1 and 2 AIM ACOs.

The Test 1 and Test 2 AIM ACOs, their AIM and SSP start dates, baseline and performance years, and relevant comparison group are listed in **Appendix 2D**. Further discussion of the baseline years used in this report is located in **Chapter 4** (Impacts of Test 1 AIM ACOs on Performance Measures in their First Performance Year) and **Chapter 5** (Comparing Test 2 AIM ACOs to Non-AIM SSP ACOs in their First AIM Performance Year). The data sources used in the evaluation are described in **Appendix 2B**.

2.2.2 Performance Measures

To assess AIM impacts, we examined the measures listed in **Exhibit 2-4**. We drew these measures from the quality measures that SSP ACOs are required to report and key claims-based measures. We grouped measures into cost, utilization, and quality of care measures. Detailed specifications for each measure are provided in **Appendix 2E**. Future reports, using at least two years of performance data will also examine measures reflecting the challenges specific to serving beneficiaries in rural or underserved areas.

Exhibit 2-4: AIM Evaluation Performance Measures

Measure Domains	Measures Description	Data Sources
Medicare payments (per beneficiary per month)	• Total • Acute inpatient • Physician services • Hospital outpatient + ambulatory surgery centers • Skilled nursing facility (SNF) • Home health • Durable medical equipment (DME)	• Medicare claims
Utilization	Inpatient • Acute inpatient stays • Any inpatient hospitalization • All-cause 30-day readmission • Any Ambulatory Sensitive Condition (ASC) admission Emergency department (ED) and observation • Any ED visits, without hospital admission • Any ED visits with hospital admission • Outpatient observation stays Post-acute care and hospice • SNF days • Any hospice Physician services • Office-based evaluation and management (E&M) visits • Berenson-Eggers Type of Service (BETOS) imaging • BETOS procedures • BETOS tests	• Medicare claims

Measure Domains	Measures Description	Data Sources
Mortality	Mortality rate	• Medicare enrollment data
Patient/Caregiver Experience	• Getting Timely Care, Appointments, and Information (ACO #1) • How Well Your Doctors Communicate (ACO #2) • Patients' Rating of Doctor (ACO #3) • Access to Specialists (ACO #4) • Health Promotion and Education (ACO #5) • Shared Decision Making (ACO #6) • Health Status/Functional Status (ACO #7)	• ACO quality measures from SSP Public Use File
Preventive Health	• Depression screening (ACO #18) • Colorectal cancer screening (ACO #19) • Mammography screening (ACO #20)	• ACO quality measures from SSP Public Use File
At-risk Populations	• Diabetes poor control (ACO#27) • Hypertension (blood pressure control) (ACO #28) • Ischemic vascular disease control (ACO#30) • Heart failure: beta blocker therapy (ACO#31) • Coronary artery disease (ACO#33) • Depression remission at 12 months (ACO #40)	• ACO quality measures from SSP Public Use File

We assessed AIM impacts on measures in different ways depending on their availability in populations of interest. Claims-based measures (and mortality) can be calculated for all Medicare beneficiaries and thus were used for beneficiary-level analyses for estimating the impact of Test 1 and Test 2 AIM ACOs. Patient/Caregiver Experience, Preventive Health, and At-risk Population measures were assessed at the ACO level for Test 2 AIM ACOs in this report. In future analyses, we will take advantage of CMS-provided beneficiary-level Consumer Assessment of Healthcare Providers and System (CAHPS) data, allowing for more flexibility in assessing AIM effects on the Patient/Caregiver Experience measures. Detail on the data sources used are provided in **Appendix 2B**.

2.3 Organization of this Report

This report is organized as follows:

- *Characteristics of AIM ACOs*: We provide descriptive statistics on ACO provider participation, assigned beneficiary characteristics, and AIM geographic markets in **Chapter 3**.
- *AIM impacts*: The impacts of AIM on claims-based measures for Test 1 AIM ACOs in the first performance year are reported in **Chapter 4**. We compare Test 2 AIM ACOs to comparable non-AIM SSP ACOs for claims-based and ACO quality measures in **Chapter 5**.
- *AIM and care management visit utilization*: Interviews conducted in mid-2016 and late 2017 identified a key focus of AIM ACOs on encouraging the use of annual wellness visits, chronic care management, and transitional care management visits. A descriptive analysis of the use of these types of visits by treatment and comparison beneficiaries is described in **Chapter 6**.
- *AIM ACOs' spending of AIM payments*: AIM quarterly expense reports are summarized and used to understand AIM ACO spending through the third quarter of 2017 in **Chapter 7**.
- Lastly, **Chapter 8** provides discussion of next steps and concludes.

3. AIM ACO Characteristics

In this chapter, we present the characteristics of AIM ACOs in their first performance year. First, we show AIM ACO participant information, including the number and types of participating providers. Next, we provide characteristics of beneficiaries assigned to AIM ACOs and discuss their geographic characteristics in terms of rurality, access, presence of other care innovations, and define and present "market favorability," a measure of geographic favorability to ACO formation. Lastly, we show the amount of AIM payments received and paid back to CMS by AIM ACOs.

Key observations include:

- Forty-seven AIM ACOs began participation in AIM: 41 were Test 1 AIM ACOs (intended to encourage ACO formation in rural, low-ACO penetration areas) and six were Test 2 AIM ACOs (intended to sustain ACO participation for smaller ACOs and encourage movement to a two-sided financial risk track). Two Test 2 AIM ACOs ended their participation in the Shared Savings Program after their first AIM performance year. All AIM ACOs began in the upside-only financial risk track, so they were not liable for any spending above their shared savings benchmark.
- Test 1 AIM ACOs were primarily located in rural and underserved areas. Most Test 1 AIM ACOs were composed of small hospitals, federally qualified health centers (FQHCs), and rural health clinics (RHCs). Many Test 1 AIM ACOs had relationships with management companies that helped to form and operate the ACOs. Relative to Test 1 AIM ACOs, Test 2 AIM ACOs were located in more urban areas and tended to serve populations vulnerable to problems with access to care, including those with a higher prevalence of Hispanic beneficiaries, beneficiaries dually eligible for Medicare and Medicaid, and those who were high cost.
- At the time of shared savings reconciliation for 2016, AIM ACOs had received $80,399,048 in dispersed AIM funds. Thirteen AIM ACOs have earned some shared savings, and a total of $19,120,603 has been recouped by CMS, or 23.8 percent of dispersed AIM funds.

3.1 AIM Participant Characteristics

Forty-seven AIM ACOs began the model, consisting of 41 Test 1 ACOs and six Test 2 ACOs (see **Exhibit 3-1**). The primary goal of AIM Test 1 was to encourage new ACO formation. All 41 Test 1 ACOs started AIM in January 2016, with 36 first participating in the Shared Savings Program in the same year and the remainder first participating in the Shared Savings Program in the prior year. The primary goal of Test 2 AIM was to sustain Shared Savings Program participation and encourage transitioning to two-sided financial risk for existing SSP ACOs. The six Test 2 AIM ACOs that started AIM in either 2015 or 2016 joined the Shared Savings Program in 2012, 2013 or 2014. Two Test 2 ACOs terminated participation in the Shared Savings Program (and thus also from AIM participation) at the end of 2015. Forty-five AIM ACOs were active in AIM through 2017. Test types and start dates for each ACO are summarized in **Exhibit 3-1**.

Exhibit 3-1: Summary of AIM Participants

SSP Start Year	AIM Test 1	AIM Test 2	
	AIM Start Date: Jan. 2016	AIM Start Date: Apr. 2015	AIM Start Date: Jan. 2016
2012	-	1*	-
2013	-	3*	-
2014	-	-	2
2015	5	-	-
2016	36	-	-
Total	47		

Source: "AIM Data and Contracts 3-9-16.xlsx." *One 2012 SSP starter and one 2013 SSP starter terminated participation in December 2015.

All ACOs initially started AIM in the first financial risk track ("Track 1"), which includes only upside risk-taking (i.e., only the potential to share in savings with no penalty for losses). One of the goals of AIM, especially for those participating in Test 2, was to encourage ACOs to move to two-sided financial risk levels (offering higher rates of shared savings coupled with paying a penalty for losses). As shown in **Exhibit 3-2**, three AIM ACOs have transitioned to two-sided financial risk levels in the 2017 or 2018 performance year. The majority of Test 1 AIM ACOs are due to renew Shared Savings Program participation in 2019, and whether they move to higher financial risk levels will be monitored.

Exhibit 3-2: AIM Financial Risk Track Participation as of 2018

	AIM Test 1	AIM Test 2
Track 1: One-sided risk only	41	2
Track 1+: Two-sided, limited down-side risk	1	1
Track 3: Two-sided risk	0	1

Source: AIM ACOs Recoupment Risk Track Renewal.xlsx

Test 1 and Test 2 AIM ACOs differed in their compositional structure. Consistent with Test 1 AIM intended to target ACOs in more rural and underserved areas, Test 1 ACOs frequently included a CAH or small IPPS hospital, FQHC or RHC while only one Test 2 AIM ACO included a hospital (**Exhibit 3-3**).

Exhibit 3-3: Summary of AIM ACO Structure by AIM Test Type

	# of ACOs	# ACOs Composed of Physicians Only	# ACOs Includes Hospital [a]	# ACOs Includes FQHC or RHC [b]
Test 1	41	6	26	9
Test 2	6	4	1	0

Source: ACO Provider RIF for 2015 and 2016.
[a] The number of ACOs including a CAH or IPPS hospital with 100 or fewer beds.
[b] The number of ACOs including a FQHC or RHC and no hospital.

Both Test 1 and Test 2 AIM ACOs are, by definition, smaller organizations that serve between 5,000 and 10,000 beneficiaries. However, there was significant variation in the number and types of affiliated providers between the two. On average, Test 1 AIM ACOs were composed of 14 non-facility-based providers (usually physicians or groups of physicians identified by tax identification numbers or TINs) and seven facility-based providers (RHCs, FQHCs, Method II CAHs, and Electing Teaching Amendment [ETA] hospitals identified through CMS Certification Numbers or CCNs) in their first performance year (**Exhibit 3-4**). In contrast, Test 2 AIM ACOs were composed of 42 non-facility-based providers on average and only two facility-based providers.

Facility- and non-facility-based providers participating in AIM ACOs vary in the number of practitioners (physician and non-physician practitioners) who bill under them. In terms of the number of practitioners, Test 1 AIM ACOs tended to be larger, encompassing, on average, 296 practitioners, compared with only 90 practitioners for Test 2 AIM ACOs.[6] The number of practitioners varied widely for Test 1 AIM ACOs—one ACO had as many as 1,386 practitioners (MissouriHealth+). For Test 1 AIM ACOs, 40.5 percent of practitioners were primary care physicians (PCPs), 17.4 percent were non-physician practitioners (NPPs), and the remaining 42 percent were specialist physicians. These percentages were similar among Test 2 AIM ACO practitioners. Descriptive statistics by ACO are located in **Appendix 3A**.

Exhibit 3-4: Summary of AIM ACO Provider Characteristics by AIM Test Type

	Test 1 AIM ACOs (n=41)				Test 2 AIM ACOs (n=6)			
	Mean	Min	Median	Max	Mean	Min	Median	Max
# Non-facility-based providers (TINs)	14	1	13	39	42	14	29	85
# Facility-based providers (CCNs)	7	0	6	24	2	0	0	10
# Practitioners*	296	34	271	1,386	90	35	65	181
Percent PCPs	40.5%	20.2%	37.2%	85.3%	42.7%	29.3%	39.5%	74.3%
Percent NPPs	17.4%	8.5%	14.8%	35.4%	16.0%	2.9%	13.7%	31.0%
Percent Specialists	42.0%	5.7%	49.2%	69.0%	41.3%	22.9%	45.0%	54.9%

Source: ACO Provider RIF for 2015 and 2016 covering the first performance year for AIM ACOs.
* The number of practitioners reported here represents those billing under the physician practices, FQHCs, and RHCs participating in AIM ACOs. It excludes practitioners billing under hospitals participating in AIM ACOs.

Many AIM ACOs contracted with external vendors offering management, consulting, and technological services. Of the 47 AIM ACOs, 36 were affiliated with a "management company." The relationship between the ACO and management company varied from specific supporting roles to key driver of ACO formation and activities (**Exhibit 3-5**). Among Test 1 AIM ACOs, only 14.6 percent were independent (no use of a management company). The management company served as the "primary contact" for communication between the ACO and CMS for 46.3 percent of Test 1 AIM ACOs, which was indicative of the management company playing a major role in forming the ACO and driving ACO activities. In contrast, only one of the six Test 2 AIM ACOs (Akira Health) had an affiliation with a management company.

Exhibit 3-5: Count of AIM ACOs by ACO Formation Typology

ACO Formation Type	Definition	Test 1 AIM ACOs		Test 2 AIM ACOs	
		# ACOs	Percent	# ACOs	Percent
Independent	No management company affiliation	6	14.6%	5	83.3%
Supplement	ACOs hired management companies to support a specific process that was lacking within the ACO. Most commonly, ACOs hired management companies to help with the application process or to serve as a legal advisor.	8	19.5%	0	0.0%
Implementer	ACOs hired management companies to implement the majority of the ACO's proposed changes. Generally, these management companies plan to hire and retain most of the	8	19.5%	1	16.7%

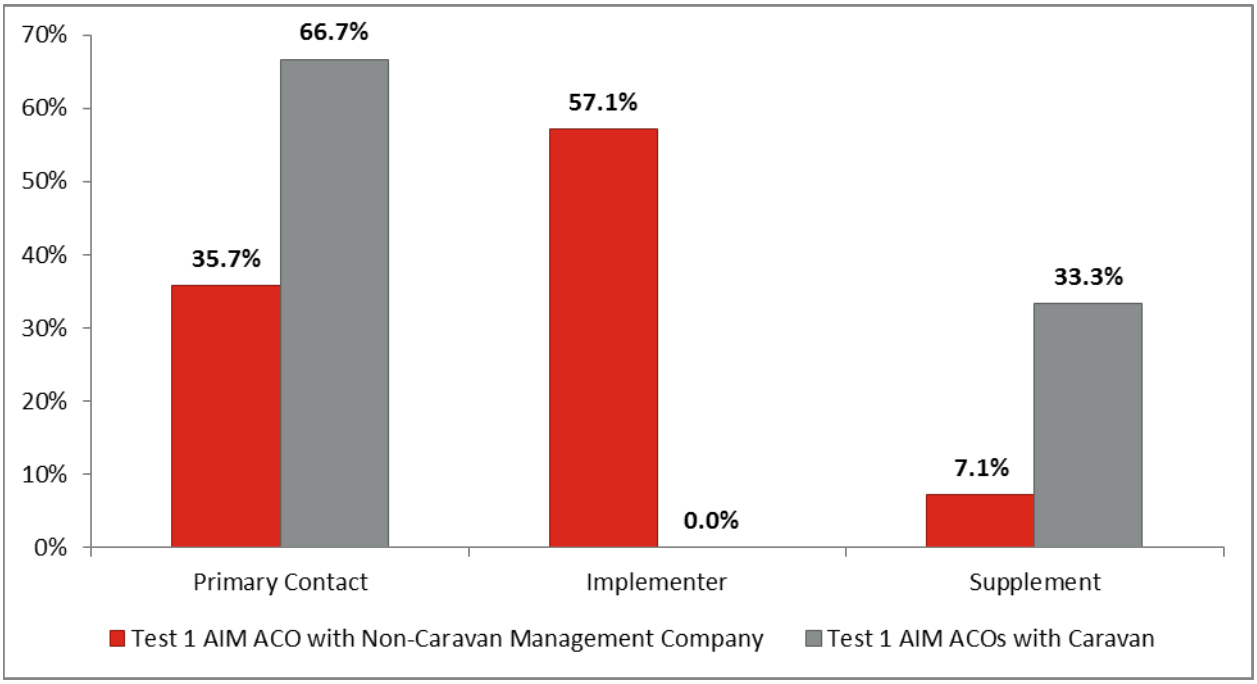
[6] Practitioners are identified through unique TIN and National Provider Identifier (NPI) combinations from the ACO Provider RIF (see **Appendix 2B** for a description of data sources used in this report). FQHCs and RHCs are required to list the NPIs affiliated with the ACO while hospitals do not. Thus, the number of practitioners reported here represents the practitioners billing under the physician practices, FQHCs, and RHCs participating in AIM ACOs and excludes those billing under hospitals participating in AIM ACOs.

ACO Formation Type	Definition	Test 1 AIM ACOs		Test 2 AIM ACOs	
		# ACOs	Percent	# ACOs	Percent
	new staff (clinical and non-clinical) within the management companies.				
Primary Contact	Management companies seem to have sought out provider groups to join AIM and/or SSP. They plan to implement all (or the majority) of the ACO's proposed plan.	19	46.3%	0	0.0%
All AIM ACOs		41	100.0%	6	100.0%

Source: The AIM model team provided formation typologies and their definitions on August 16, 2016. ACOs' typologies were re-evaluated during introductory interviews conducted in the fall of 2016. Formation typologies may have changed in 2017. The AIM model team categorized Baroma Healthcare International as "unknown" type and we were unable to confirm its typology via an interview; we have categorized it as "Independent."

One management company—Caravan Health—is affiliated with more than half of Test 1 AIM ACOs (21 of 41 ACOs). **Exhibit 3-6** shows the formation type of the 35 Test 1 AIM ACOs that use management companies by whether the management company is Caravan Health. The majority of the Test 1 AIM ACOs that hired Caravan Health had the formation type of "primary contact" (66.7 percent), indicating that Caravan Health sought out many provider groups and had a major convening role in forming the ACO and its daily functioning. Non-Caravan Health Test 1 AIM ACOs using management companies were most likely to have a formation type of "implementer" (57.1 percent). Under this formation type, the management company still had a large role in operations, but the management company did not form the ACO.

Exhibit 3-6: Formation Types for Test 1 AIM ACOs Using Management Companies (N=35)



Source: The AIM model team provided formation typologies and their definitions on August 16, 2016. ACOs' typologies were re-evaluated during introductory interviews conducted in the fall of 2016. Formation typologies may have changed in 2017.

3.2 AIM Beneficiary Characteristics

Medicare FFS beneficiaries were assigned to AIM ACOs using retrospective assignment based on the beneficiaries' use of primary care (see **Appendix 2C** for a description of the SSP assignment methodology). We present the demographic, health, and health care utilization patterns of beneficiaries assigned to AIM

ACOs in **Exhibit 3-7**. Figures represent the average (unweighted) percentages across Test 1 and Test 2 ACOs, separately. ACO-specific statistics are located in **Appendix 3B.**

Exhibit 3-7: Beneficiary Characteristics by AIM Test Type in First Performance Year [a]

	Test 1 AIM ACOs (N=41)				Test 2 AIM ACOs (N=6)			
	Mean	Min	Median	Max	Mean	Min	Median	Max
Number of assigned beneficiaries	9,439	4,362	8,741	19,675	5,753	4,954	5,292	7,977
Disabled Medicare entitlement	26.0%	11.3%	24.6%	59.7%	23.2%	14.1%	24.9%	27.8%
End Stage Renal Disease (ESRD) Medicare entitlement	0.9%	0.3%	0.8%	2.3%	2.1%	0.9%	2.2%	3.4%
Medicare/Medicaid dual eligibility	23.3%	5.7%	21.9%	49.4%	36.6%	15.9%	28.4%	69.2%
Female	56.8%	52.4%	56.8%	61.1%	59.6%	57.6%	59.0%	62.9%
Average age	71.3	61.0	71.7	74.4	72.0	70.4	71.7	74.5
White	87.9%	46.2%	94.5%	97.8%	49.7%	21.4%	51.0%	80.5%
Black	6.1%	0.1%	1.4%	48.5%	14.8%	0.3%	10.3%	50.3%
Hispanic	2.9%	0.2%	1.1%	19.5%	31.1%	1.5%	19.1%	74.5%
Other race	3.1%	0.7%	1.9%	27.7%	4.4%	1.0%	3.2%	12.3%
Average HCC risk score [b]	0.99	0.81	0.97	1.27	1.17	0.97	1.13	1.53
Number of chronic conditions [b]	2.3	1.8	2.4	2.9	2.8	2.4	2.6	3.5
Average PBPM Medicare spending at baseline[c]	$916	$721	$903	$1,646	$1,322	$878	$1,238	$1,939

[a] The first AIM performance year was 2016 for the Test 1 AIM ACOs and for the Test 2 AIM ACOs was 2015 for some and 2016 for others (see **Appendix 2D**).
[b] Average HCC score and number of chronic conditions were lagged by three years for each beneficiary to precede any ACO formation provided the beneficiary can be observed back three years; if not, then we used their "New Enrollee" HCC score from any time in the last three years as the lagged HCC score.
[c] Represents average per beneficiary per month Medicare spending during the ACO baseline period. See **Appendix 2D** for information on the baseline years for each AIM ACO.

Beneficiaries assigned to Test 1 AIM ACOs tended to be white and in better health compared to those assigned to Test 2 AIM ACOs. Test 2 AIM ACOs were smaller (served fewer beneficiaries), and those beneficiaries were more likely to be black or Hispanic, dually eligible for Medicaid and Medicare, and had higher utilization of Medicare-covered services. More specifically:

- *Number of assigned beneficiaries*: To be eligible for AIM, ACOs generally had to have between 5,000 and 10,000 assigned beneficiaries. The average ACO size was 9,439 assigned beneficiaries for Test 1 AIM ACOs and 5,753 assigned beneficiaries for Test 2 AIM ACOs. Test 1 AIM ACOs ranged in size from a low of 4,362 beneficiaries (Kentucky Primary Care Alliance) to 19,675 beneficiaries (Illinois Rural Community Care Organization). Test 2 AIM ACOs ranged in size from 4,954 (Sunshine ACO) to 7,977 beneficiaries (Akira Health).[7]

- *Sex and age*: On average, 56.8 percent of Test 1 AIM ACO assigned beneficiaries were female. The mean and distribution was similar for Test 2 AIM ACOs. The average age of assigned beneficiaries was similar for Test 1 and 2 AIM ACOs (71.3, and 72.0, respectively). One Test 1 AIM ACO (MissouriHealth+) had a mean assigned beneficiary age of 61, reflecting a high proportion of disabled beneficiaries (59.7 percent) for this AIM ACO.

[7] The minimum number of assigned beneficiaries required by the Shared Savings Program is 5,000. Kentucky Primary Care Alliance increased its assigned beneficiary count to 9,695 in 2017. Sunshine ACO increased its number of assigned beneficiaries to 5,015 in 2016.

- *Race/ethnicity*: Test 1 AIM ACOs' assigned beneficiaries were on average 87.9 percent white, with a median of 94.5 percent. In contrast, Test 2 AIM ACOs' assigned beneficiaries were on average only 49.7 percent white, with a median of 51.0 percent. There was large variation across ACOs. Test 1 AIM ACOs ranged from:
  - 0.1 percent black (Avera ACO II) to 48.5 percent black (Carolina Medical Home Network ACO),
  - 0.2 percent Hispanic (Aledade West Virginia ACO) to 19.5 percent Hispanic (National Rural ACO 6), and
  - 0.7 percent "other" race (National Rural ACO 3) to 27.7 percent "other" race (Akira Health of Los Angeles).

  Test 2 AIM ACOs ranged from:
  - 0.3 percent black (Sunshine ACO) to 50.3 percent black (Premier Healthcare Network),
  - 1.5 percent Hispanic (Premier Healthcare Network) to 74.5 percent Hispanic (Sunshine ACO), and
  - 1.0 percent "other" race (Sunshine ACO) to 12.3 percent "other" race (Akira Health).
- *Disability and ESRD*: On average, about a quarter of Test 1 and 2 assigned beneficiaries originally qualified for Medicare through disability status rather than age. On average, less than 1 percent (0.9 percent) of AIM Test 1 assigned beneficiaries had ESRD while 2.1 percent of AIM Test 2 assigned beneficiaries had ESRD.
- *Medicaid and Medicare dual eligibility*: Test 2 AIM ACOs had higher average rates of dually eligible assigned beneficiaries (36.6 percent versus 23.3 percent for Test 1 AIM ACOs). ACOs ranged widely in the percentage of dually eligible beneficiaries: Test 1 AIM ACOs ranged from 5.7 percent to 49.4 percent and Test 2 AIM ACOs ranged from 15.9 percent to 69.2 percent. Baroma Healthcare International, a Test 2 AIM ACO, had the highest rate of dually eligible beneficiaries (69.2 percent). The next highest rate was Sunshine ACO, also a Test 2 AIM ACO, with 59.0 percent dually eligible beneficiaries. MissouriHealth+ had 49.4 percent dually eligible assigned beneficiaries, the highest rate among Test 1 AIM ACOs.
- *HCC risk scores and chronic conditions*: Three-year lagged HCC risk scores were examined as an indicator for the underlying clinical severity of beneficiaries who were assigned to AIM ACOs. We averaged the HCC score across assigned beneficiaries for each AIM ACO. The severity observed was slightly higher for the average Test 2 AIM ACOs (1.17 versus 0.99 for the average Test 1 AIM ACOs). The highest average HCC risk score was 1.53 for Baroma Healthcare International (Test 2 AIM ACO). Akira Health of Los Angeles had the highest average risk score among Test 1 AIM ACOs of 1.27. The average three-year lagged number of chronic conditions per beneficiary was slightly higher for Test 2 AIM ACOs (2.8 on average versus 2.3 for Test 1 AIM ACOs) out of 11 chronic condition categories (see **Appendix 3C** for the list of conditions).
- *Average per beneficiary per month (PBPM) total Medicare spending in baseline*: The PBPM total Medicare spending in the baseline period was $916 for Test 1 AIM ACOs and $1,322 for Test 2 AIM ACOs on average across ACOs.[8] The lower average total Medicare spending for Test 1 AIM ACOs was consistent with generally better health among Test 1 AIM ACO assigned beneficiaries. Akira Health of

[8] The baseline period included three years of data for Test 1 AIM ACOs and two years of data for Test 2 AIM ACOs.

Los Angeles had the highest average spending among Test 1 AIM ACOs ($1,646), and Baroma Healthcare International was highest among Test 2 AIM ACOs ($1,939).

3.3 AIM Market Characteristics

In this section, we describe the characteristics of the markets served by AIM ACOs. First, we examine measures of rurality and health care access for AIM ACOs. Next, we report on the presence of other CMS initiatives in AIM ACO markets. Lastly, we present and discuss a measure of market favorability toward ACO formation, particularly for AIM markets.

3.3.1 Rurality

As discussed in **Chapter 2.2**, we defined each AIM ACO's geographic market as a group of Primary Care Service Areas (PCSAs) based on the location of the ACOs' assigned beneficiaries and the typical travel distance to a primary care provider. Rurality and health access of these geographic markets is described in **Exhibit 3-8**. ACO rurality was measured by the percentage of an ACO's assigned beneficiaries living in areas with an urban core of less than 50,000 people,[9] and access is measured by the percentage of an ACO's assigned beneficiaries living in areas designated as primary care or mental health professional shortage areas (HPSAs). **Appendix 3D** provides this information at the ACO level.

On average, 75.9 percent of Test 1 AIM ACOs' assigned beneficiaries resided in a rural area **(Exhibit 3-8)**. For a median Test 1 AIM ACO, 85.8 percent of its assigned beneficiaries resided in a rural area. For two AIM ACOs, 100 percent of assigned beneficiaries were located in a rural area—Avera ACO in Minnesota and South Dakota and San Juan ACO located in Colorado— and several more Test 1 AIM ACOs had more than 99 percent of assigned beneficiaries living in rural areas. Most beneficiaries (71.3 percent) resided in areas that experience a mental health professional shortage, and about 15.1 percent on average resided in areas with a primary care health professional shortage designation.

Beneficiaries assigned to Test 2 AIM ACOs were much less likely to reside in rural areas. For the median Test 2 AIM ACO, only 0.6 percent of its beneficiaries resided in a rural area. Although most beneficiaries assigned to Test 2 AIM ACOs resided in areas with no primary care HPSA designation, 39.6 percent on average resided in areas that experience a mental health professional shortage.

The finding that most Test 1 AIM ACO beneficiaries lived in rural areas is consistent with the intent of Test 1 AIM to establish ACOs in such areas.

[9] Defined as rural-urban commuting area code (RUCA) code 4 or greater. Specifically, a RUCA score of 4 indicates an area that is a "Micropolitan area core: primary flow within an Urban Cluster of 10,000 to 49,999," so rural beneficiaries resided in areas that size or smaller.

Exhibit 3-8: Summary of Rurality Measures across the 47 AIM ACOs [a]

Rurality Measure	Mean	Min	25th Percentile	Median	75th Percentile	Max
Test 1 (41)						
Rural	75.9%	0.3%	75.2%	85.8%	97.4%	100.0%
Primary care HPSA	15.1%	0.0%	3.3%	11.9%	24.1%	60.4%
Mental health care HPSA	71.3%	0.0%	51.8%	83.2%	98.3%	100.0%
Test 2 (6)						
Rural	1.0%	0.0%	0.0%	0.6%	0.8%	3.9%
Primary care HPSA	0.7%	0.0%	0.0%	0.5%	1.5%	1.8%
Mental health care HPSA	39.6%	0.0%	0.0%	18.7%	100.0%	100.0%

[a] ACO rurality is measured by the percentage of an ACO's assigned beneficiaries living in areas with RUCA codes ≥ 4. ACO HPSA percentage is measured by the percentage of an ACO's assigned beneficiaries living in areas designated as mental health or primary care health professional shortage areas. See **Appendix 3D** for ACO-specific information.

3.3.2 Overlapping Initiatives

Though most AIM ACOs tend to locate in rural, underserved geographic areas, some shared their markets with other CMS initiatives that may influence the care delivered by ACO providers to FFS beneficiaries or be an indicator to the openness of the market to health care transformation.

The extent of overlap across AIM and other CMS initiatives is shown in **Exhibit 3-9**. We defined two initiatives as overlapping if at least 0.5 percent of beneficiaries assigned to an AIM ACO share at least one PCSA with beneficiaries attributed to another initiative. Most (96 percent or 45 of 47) AIM ACOs shared their markets with at least one non-AIM SSP ACO. Over half (57 percent or 27 of 47) of AIM ACOs shared their market with at least one other AIM ACO. About the same number of AIM ACOs shared their markets with Medicare Care Choices Model and the State Innovation Models Initiative. Other models commonly operating in AIM markets included the Comprehensive Care for Joint Replacement Model, Next Generation ACO Model, and the Oncology Care Model. An average AIM ACO overlapped with about 5.7 initiatives.

These results show that, although AIM ACOs are located in mostly rural areas, AIM is often not the only initiative affecting care transformation in the market. The extent to which these other initiatives impact AIM providers and ultimately the health of beneficiaries in the market remains unclear. Future analyses of AIM impacts will consider the presence of these additional CMS initiatives.

Exhibit 3-9: CMS Initiatives Overlapping with AIM ACO Markets

Initiative Name	# AIM ACOs	% AIM ACOs
Non-AIM ACOs in the Shared Savings Program	45	96%
Bundled Payments for Care Improvement	33	70%
AIM ACOs	27	57%
Medicare Care Choices Model	27	57%
State Innovation Models: Model Test Awards Rounds 1 and 2	27	57%
Comprehensive Care for Joint Replacement Model	23	49%
Next Generation ACO Model	20	43%
Oncology Care Model	18	38%
Community Based Care Transitions Program Demonstration	14	30%
Comprehensive Primary Care Initiative	10	21%
Independence at Home Demonstration	7	15%
Rural Community Hospital Demonstration	5	11%
Multi-Payer Advanced Primary Care Practice Demonstration	4	9%
Comprehensive ESRD Care Model	3	6%
Pioneer ACO Model	2	4%

Initiative Name	# AIM ACOs	% AIM ACOs
Frontier Community Health Integration Project Demonstration	2	4%
Maryland All-Payer Model	1	2%
Mean Number of Initiatives per AIM ACO Market	5.7	

Source: Information on initiatives other than SSP and AIM was obtained from AIM Overlaps 2016.xlsx provided by CMS.

3.3.3 Market Favorability Scores for ACO Formation

Marketplace characteristics differ by region and give rise to varying market conditions that may be more or less favorable to ACO formation. Since a key goal of AIM is for ACOs to form in areas of the country characterized by less ACO presence, we examined whether AIM ACOs were indeed established in such areas. Through an extensive review of the literature, we identified marketplace characteristics that relate to ACO formation and sustainability. We organized these characteristics according to five health care domains:

1. *Health care resource use*: measures of spending and utilization in a geographic region. Higher utilization areas may be attractive, as there is greater opportunity to achieve shared savings.
2. *Demographic and health characteristics*: descriptive characteristics of beneficiaries and their health in a geographic region. Factors such as education levels, comorbid burden, and income may factor into a prospective ACO's perception of its ability to engage with and impact the health of an assigned beneficiary population.
3. *Health care quality*: measures of process, outcomes, or patient experience related to the receipt of care. If patients in an area already have higher health care quality, potential ACOs may find it easier to form.
4. *Health care access*: measures of patient access to adequate treatment and providers with a geographic region. Regions with higher patient access to care may be an attractive location to start an ACO.
5. *Market structure*: the infrastructure in a regional marketplace that better allows for coordination of care through integrated systems. Potential ACOs may be more drawn to establish themselves in markets that have infrastructure conducive to coordinating patient care across care settings.

We then used a principal component analysis (PCA) to rank markets on a scale of 0 to 100 as favorable or unfavorable to ACO formation according to these domains. The geographic level for analysis was the hospital referral region (HRR).[10] More detailed information on our approach to conducting the analysis, including complete lists of the variables and data sources used is provided in **Appendix 3E**.

The resulting market favorability score incorporates how the differences in marketplace characteristics were associated with the presence of an AIM ACO. Higher scores correspond to markets that are more favorable to ACO formation and sustainability. Because AIM Test 1 was designed to encourage ACO formation in areas underserved by existing ACOs, we would anticipate AIM ACOs to be located in areas with lower favorability scores. Indeed, **Exhibit 3-10** shows that, on average, Test 1 AIM ACOs tended to locate in markets that were less favorable (26.96) in general and relative to comparable non-AIM SSP

[10] Each HRR contains at least one hospital that performs major cardiovascular procedures and neurosurgery and represents the surrounding area from which they draw their referrals for tertiary medical care; there are 306 HRRs within the United States. Because of limitations of available data on marketplace measures needed for these analyses, we could not use the PCSA-level as the geographic unit. For more information on HRRs, see Dartmouth Atlas of Health Care. (2017). Retrieved from http://www.dartmouthatlas.org/data/region/

ACOs (average favorability score of 38.66). Comparable non-AIM SSP ACOs consist of ACOs starting SSP in the same year cohort as AIM ACOs, having the same approximate number of assigned beneficiaries, participating in Track 1 (no down-side financial risk), and excluding any ACOs that participated in the AP ACO Model. On the other hand, Test 2 AIM ACOs, which did not have the same goal as Test 1 AIM ACOs, tended to be located in more favorable markets (average score of 57.88). Their market score was more favorable than comparable non-AIM SSP ACOs, which had an average score of 42.39. Market favorability scores for each AIM ACO are shown in **Appendix 3D**.

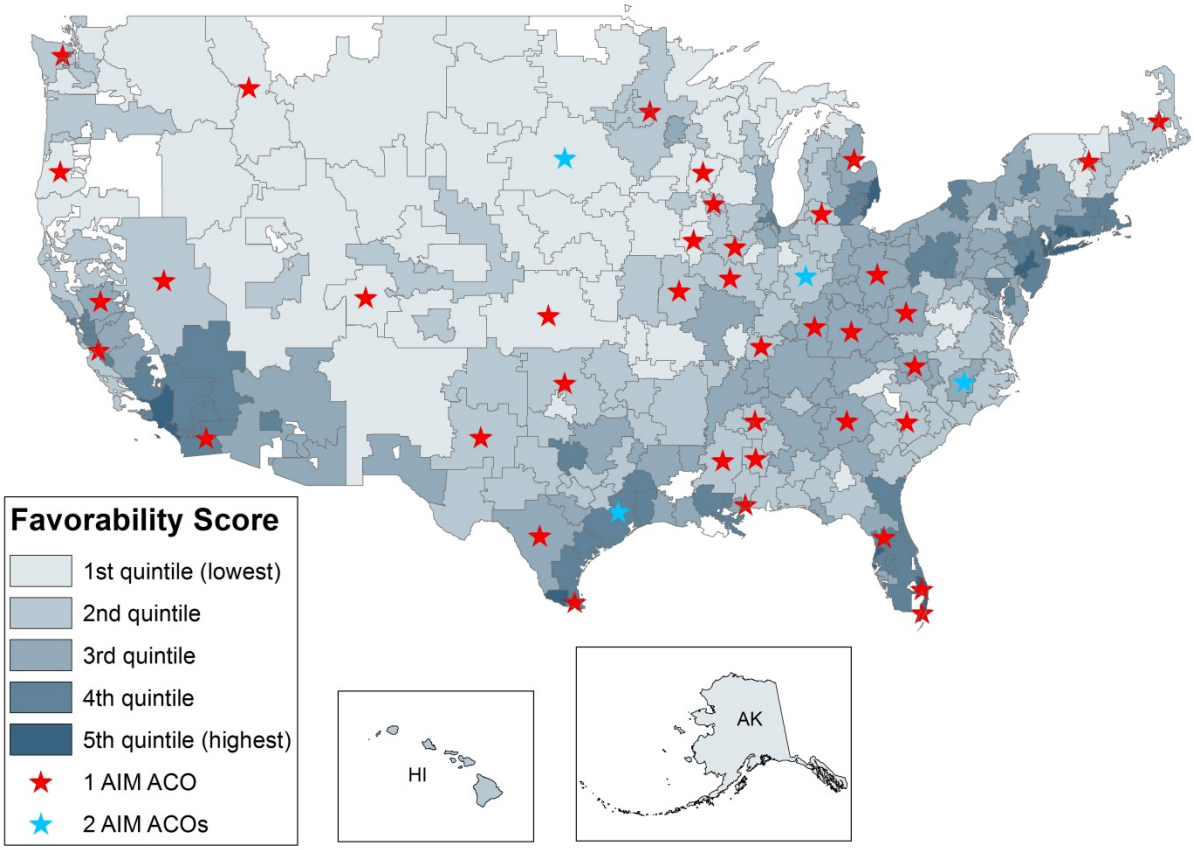
Exhibit 3-10: Market Favorability Scores for ACO Formation by AIM Test

	Mean [b]	Min	Median	Max	Comparable Non-AIM SSP ACOs Mean [c]
Test 1 (N=39) [a]	26.96	0.59	29.40	57.53	38.66
Test 2 (N=6)	57.88	32.18	50.62	100.00	42.39

[a] Due to incomplete data, seven HRRs were dropped from the analysis, resulting in missing favorability scores for two Test 1 AIM ACOs: New Hampshire Rural ACO and Beacon Rural Health.
[b] The mean was weighted by the number of beneficiaries in each ACO.
[c] Comparable non-AIM SSP ACOs were defined by cohort (same SSP start date as AIM ACOs), financial risk Track 1 status, size (similar number of assigned beneficiaries as AIM ACOs), and excludes any SSP ACOs participating in the AP ACO Model (see **Chapter 5** for more detail on comparable non-AIM SSP ACOs). N=83 for non-AIM SSP ACOs comparable to Test 1 AIM ACOs and N=67 for non-AIM SSP ACOs comparable to Test 2 AIM ACOs.

Estimated market favorability scores varied widely across markets and low-score areas generally overlapped with rural areas, as shown in **Exhibit 3-11**. Large urban areas ranked highest, including Miami, Florida; Manhattan, New York; and Los Angeles, California. Markets with large rural areas ranked lowest, including areas in Alaska, Montana, South Dakota, and Wyoming. There was a mix of locales in the middle of the distribution, but they tended to be smaller cities. As would be expected given the rurality of AIM ACO assigned beneficiaries, many AIM ACOs were located within markets with lower market favorability scores.

Exhibit 3-11: Map of Market Favorability Scores for ACO Formation by HRR [a]



[a] Stars indicate broadly where AIM ACOs are located. Seven HRRs had incomplete data and were dropped from the analysis, leading to pockets of missing data in Montana, Oregon, Louisiana, North Carolina, and Maine.

We assessed whether market favorability scores differed between the 89 markets that had at least one AIM ACO and the 210 markets where there were no AIM ACOs (**Exhibit 3-12**). The mean ACO market favorability score in markets without an AIM ACO was 21.4 percent higher than the mean in markets with at least one AIM ACO (34.6 versus 28.5, $p < 0.001$). For four of the five quintiles of the market favorability score distribution, HRRs without AIM ACOs had higher mean market favorability scores than HRRs with at least one AIM ACO present.

Exhibit 3-12: Market Favorability Scores for ACO Formation, AIM Markets Versus Non-AIM SSP Markets

Variable	AIM ACO Present in HRR (*n* = 89) Mean, SD	No AIM ACOs Present in HRR (*n* = 210) Mean, SD	Percent Difference	P-value
Favorability score across HRRs	28.5 (15.5)	34.6 (14.6)	21.4	0.001
Favorability score among first HRR quintile (lowest scores)	10.7 (5.0)	16.2 (5.1)	51.4	< 0.001
Favorability score among second HRR quintile	20.2 (2.7)	25.6 (1.9)	26.7	< 0.001
Favorability score among third HRR quintile	27.2 (1.2)	33.4 (2.3)	22.7	< 0.001
Favorability score among fourth HRR quintile	34.1 (3.0)	41.6 (2.5)	22.0	< 0.001
Favorability score among fifth HRR quintile (highest scores)	51.8 (15.0)	56.4 (8.4)	8.9	0.134

Note: After calculating market favorability scores, we normalized them on a 0 to 100 scale by defining the largest score at 100 as most favorable and the smallest at 0 as least favorable. We used a *t*-test to compare the mean favorability score measure across all quintiles and individual *t*-tests for each quintile. Medicare SSP organizations include AIM ACOs. Thus, HRRs included in the column "No AIM ACOs Present in HRR" includes HRRs that include SSP ACOs that are not AIM ACOs. We used a 10 percent assigned beneficiary rule to define each HRR as having either an AIM or SSP ACO based on 2015 and 2016 beneficiary data from CMS Master Data Management file extracts from September 2016 and January 2017.

This market favorability model identified geographic regions that were relatively more or less favorable to ACO development and suggests that potential regional favorability toward ACO development does exist. Estimated marketplace favorability scores are associated with actual ACO penetration across the nation, suggesting that many of the inputs we included in our model may, in part, influence ACO formation. We found that Test 1 AIM ACOs tended to be located in health care markets that were less favorable to ACO development as compared with non-AIM SSP ACOs, consistent with a key goal of AIM. Future work will examine how ACO outcomes correlate with the ACO market favorability score.

3.4 AIM Funds

As described in **Chapter 2**, the amount of AIM funds available to AIM ACOs depends on whether the ACO participated in Test 1 or Test 2 and the number of beneficiaries assigned to the ACO. Through the 2016 performance year, AIM ACOs received $80,399,048 in AIM payments and are expected to pay them back to CMS through earned shared savings.[11] As of the time of reconciliation for 2016, 13 AIM ACOs had earned some shared savings and paid back all or a portion of AIM payments received thus far. A total of $19,120,603 has been recouped by CMS, or 23.8 percent of dispersed AIM payments. **Appendix 3F** shows the total amount of AIM payments received, the amount of earned shared savings, and the amount recouped by CMS for each AIM ACO. AIM ACOs must report how they spend AIM payments in quarterly reports to ensure that their spending is consistent with their CMS-approved plans for using AIM funds (see **Chapter 7**). The evaluation will continue to track the amount of AIM payments disbursed to AIM ACOs and recoupment amounts in the following years.

[11] This figure excludes AIM funds received by the two AIM ACOs that exited the Shared Savings Program in 2015 since they were required to pay back all AIM funds. This figure represents all AIM funds dispersed to ACOs according to the structure of payments displayed in **Exhibit 2-2**.

4. Impacts of Test 1 AIM ACOs on Performance Measures in Their First Performance Year

This chapter presents our findings on the impacts of Test 1 AIM on claims-based spending, utilization, and quality performance measures. We examine the first AIM performance year (2016) for Test 1 AIM ACOs and compare AIM-assigned beneficiaries to ACO market comparison groups composed of Medicare FFS beneficiaries eligible for ACO assignment. We describe the methodology used to estimate impacts, discuss underlying assumptions of our model, and present findings.

Key findings on the impact of Test 1 AIM ACOs include:

- We estimated reduced spending for 30 Test 1 AIM ACOs (eight ACOs with statistically significant reduced spending, $p<0.05$) and greater spending for 11 AIM ACOs (no ACOs with statistically significant greater spending, $p<0.05$) relative to comparison beneficiaries in the AIM ACOs' markets. When aggregating across AIM ACOs, we estimated average spending reductions of -$22.70 per beneficiary per month compared to market comparison groups. These estimated reductions translate to $105.4 million in reduced spending for the first AIM performance year, representing a 2.2 percent reduction in base Medicare spending.[12]
- Although there was variation in the findings across AIM ACOs, in general, estimated reductions in total Medicare spending were supported by findings for other spending and utilization measures, such as decreases in spending for costly medical care including acute hospitalizations, emergency department visits, and observation stays. We did not find decreased physician spending; instead there was some evidence of increases in office-based physician visits and use of tests.
- Ten Test 1 AIM ACOs earned shared savings according to the financial reconciliation in 2016, totaling $22.6 million. After subtracting the $22.6 million in earned shared savings from aggregate reductions in spending, estimated net savings to the Medicare program were approximately -$82.8 million in the first AIM performance year. These savings represented 1.7 percent of total AIM ACO Medicare spending.

4.1 Methods

We used a difference-in-differences (DID) framework to estimate AIM impacts. DID is a quasi-experimental method that can be used to identify the average effect of participation in an intervention when random assignment is not possible. The DID method controls for time-invariant differences between ACO and non-ACO populations by subtracting outcomes in the populations across time. This section describes the components of the treatment and comparison group, baseline period, performance measures, and analytic approach to applying the DID methodology.

***Comparison Group*:** The comparison group of FFS beneficiaries was drawn from each ACO's market. An ACO's market consisted of the PCSAs where the ACO's assigned beneficiaries resided (see **Chapter 2.2** for more detail on AIM markets).[13] We selected all beneficiaries within the ACO's market who met

[12] Base spending represents total Medicare spending by AIM ACO beneficiaries during the baseline period net of the change in total Medicare spending of non-ACO FFS beneficiaries between baseline and performance years in ACO markets.

[13] We did not draw comparison beneficiaries from PCSAs with less than 0.5 percent of the ACO's total assigned beneficiaries.

the eligibility requirements for assignment, which consisted of Parts A, B, and C coverage stipulations, geographic restrictions, and at least one eligible primary care visit with an eligible provider.[14] We modified this last eligibility requirement to include only those beneficiaries with eligible visits to PCPs or NPPs. Although the assignment algorithm allows for beneficiary assignment based on primary care visits to non-PCPs (i.e., certain specialist physicians), the majority of assigned beneficiaries were assigned through visits to PCPs and NPPs, and we achieved better comparability between treatment and comparison groups when implementing this restriction. Lastly, beneficiaries assigned to another Medicare ACO (including Next Generation ACOs and other SSP ACOs) were excluded (see **Appendix 2C** for more information on the beneficiary assignment methodology). The size of each ACO's comparison group in the first performance year is shown in **Appendix 4D**.

***Assignment Algorithm*:** We applied the SSP retrospective assignment algorithm to 2016 claims data to identify beneficiaries assigned to the 41 Test 1 AIM ACOs. As detailed in **Appendix 2C**, our application of the SSP assignment algorithm yielded a very similar (within 2 percent overall) group of beneficiaries with respect to the official SSP assignment list. Beneficiaries assigned to each ACO served as the treatment group—or beneficiaries exposed to the intervention of ACO.

***Baseline and Performance Time Periods*:** The 41 Test 1 AIM ACOs began AIM in January 2016. The first AIM performance year for these ACOs was January 1, 2016 through December 31, 2016. The three prior years (January 1, 2013 through December 31, 2015) served as the baseline period.[15]

***Baseline Construction*:** We constructed the baseline by hypothetically assigning beneficiaries to ACO providers in each year of the baseline period. The providers used for assignment were identified using the TINs and CCNs of ACO providers participating in the AIM ACO in the first performance year, (see **Appendix 2C** for additional detail).[16] For each ACO and in each baseline year, we identified a comparison group in the ACO's market using the same methodology as described above. On average, the baseline PCSAs overlapped the performance comparison market by 86.4 percent.

***Performance Measures*:** We examined the 21 claims- or enrollment-based measures listed in **Chapter 2.2** and described in **Appendix 2E**.

***Performance Measure Statistical Specifications*:** The statistical specification of the regression models differed to accommodate the five types of data distributions among the performance measures.[17] **Appendix 4A** describes the statistical specification that was chosen for each measure by data type.

***Risk Adjustment*:** Despite careful construction of each ACO's market comparison group for each AIM ACO, the relative mix of beneficiary characteristics between the treatment and comparison group still may change over time for reasons external to the model (e.g., random chance or regulatory changes). If

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[14] https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/Downloads/Shared-Savings-Losses-Assignment-Spec-V4.pdf

[15] Five AIM ACOs started SSP in 2015, one year prior to AIM. For these ACOs, their first SSP year is thus part of their baseline period.

[16] We found that the large majority of performance year ACO providers were present and identifiable in at least one of the baseline years. We also observed high rates of the same individual practitioners (NPIs) present in both the performance and baseline periods.

[17] Although a linear, ordinary least squares model may still have retrieved consistent impact estimates in some cases, such results would be less precise than those obtained from a better fitting model that accounts for the non-normal distribution of the performance measures.

beneficiary characteristics are correlated with the outcome measures, then failure to control for changes in these beneficiary characteristics may bias the estimated impact of AIM. To address this possibility, the preferred model accounted for a rich set of observable characteristics carefully selected by reviewing prior literature related to ACO evaluation as well as incorporating additional factors based on theoretical considerations and rigorous empirical testing.[18] The list of and rationale for the risk adjustment factors chosen for the analysis are provided in **Appendix 4B**.

***Covariate Balancing*:** Covariate balancing refers to methods for ensuring that the risk factors selected are balanced (or proportional) in the treatment and comparison group. Balance between treatment and comparison beneficiaries is desirable because it reduces potential bias in the estimated treatment effect. Better balance also means that our ability to accurately estimate differences in outcomes between the AIM and comparison groups is less dependent on selecting the correct statistical specification for our regression models. The ACO market design of the comparison group and the inclusion of a rich set of risk adjustors are essential contributors to achieving balance. We also apply econometric methods to further improve the similarity of comparison to treatment beneficiaries.

To improve covariate balance, we estimated weights that account for observable differences between the treatment and comparison group. One popular approach to creating such weights is to estimate a binary model that predicts the probability that an observation is in the treated group (the propensity score), and weighting observations by the inverse of their propensity score. We opted instead to use a newer technique known as entropy balancing (EB).[19] Under EB, distributions, not simply means, are balanced across treatment and comparison groups, so covariate balance under EB should be an improvement over the balance achieved by applying inverse propensity score weights. We applied EB weights to balance covariates between the treatment and comparison groups.[20] The weights were then used in the regression analyses.

***Analysis*:** The DID evaluation design compares changes in outcomes among treatment beneficiaries to changes in outcomes among comparison beneficiaries. The change in an outcome is defined as the difference between the average outcome in the performance period (after the start of AIM) and the

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[18] McWilliams JM, LA Hatfield, ME Chernew, BE Landon, and AL Schwartz. (2016). "Early Performance of Accountable Care Organizations in Medicare." *The New England Journal of Medicine*, Vol. 374. pp.2357-2366.

McWilliams JM, ME Chernew, BE Landon, and AL Schwartz. (2015) "Performance Differences in Year 1 of Pioneer Accountable Care Organizations." *The New England Journal of Medicine*, Vol. 372. pp.1927-1936.

McWilliams, JM, BE Landon, ME Chernew, and AM Zaslavsky. (2014) "Changes in Patients' Experience in Medicare Accountable Care Organizations." *The New England Journal of Medicine*, Vol. 371. pp.1715-1724.

Nyweide DJ, W Lee, TT Cuerdon, HH Pham, M Cox, R Rajkumar, and PH Conway. (2015). "Association of Pioneer Accountable Care Organizations vs. Traditional Medicare Fee for Service with Spending, Utilization, and Patient Experience." *JAMA*, Vol. 313(21). pp.2152-2161.

Schwartz, AL, ME Chernew, BE Landon, and JM McWilliams. (2015). "Changes in Low-Value Services in Year 1 of the Medicare Pioneer Accountable Care Organization Program." *JAMA Internal Medicine*, Vol. 175(11). pp.1815-1825.

[19] Hainmueller, Jens. (2012). "Entropy Balancing for Causal Effects: A Multivariate Reweighting Method to Produce Balanced Samples in Observational Studies." *Political Analysis*, Vol. 20. pp.25-46.

[20] Hainmueller, Jens and Yiquing Xu. (2013) "eBalance: A Stata Package for Entropy Balancing." *Journal of Statistical Software*, Vol. 54(7). pp.1-18.

average outcome in the baseline period (before the start of AIM). This approach accounts for time-invariant differences between the treatment and comparison groups.

***Parallel Trends Testing*:** The key assumption of the DID design is the "parallel trends" assumption, which requires similar trajectories in the outcomes between AIM ACOs and comparison groups prior to the start of the intervention. The methodology we used to test the assumption and summary of the ensuing results are described in **Appendix 4C**.

4.2 Results

We report findings from comparing Test 1 AIM ACO-assigned beneficiaries to their market comparison groups. We present the estimated impacts of AIM on total Medicare spending and other performance measures. We calculated these impacts as the risk-adjusted difference in spending or utilization between beneficiaries assigned to AIM ACOs in the performance period and those hypothetically assigned to AIM ACOs in the baseline relative to the risk-adjusted difference between non-ACO FFS beneficiaries within the ACO's market between the performance and baseline periods. The last section of this chapter provides limitations, conclusions, and a discussion of next steps.

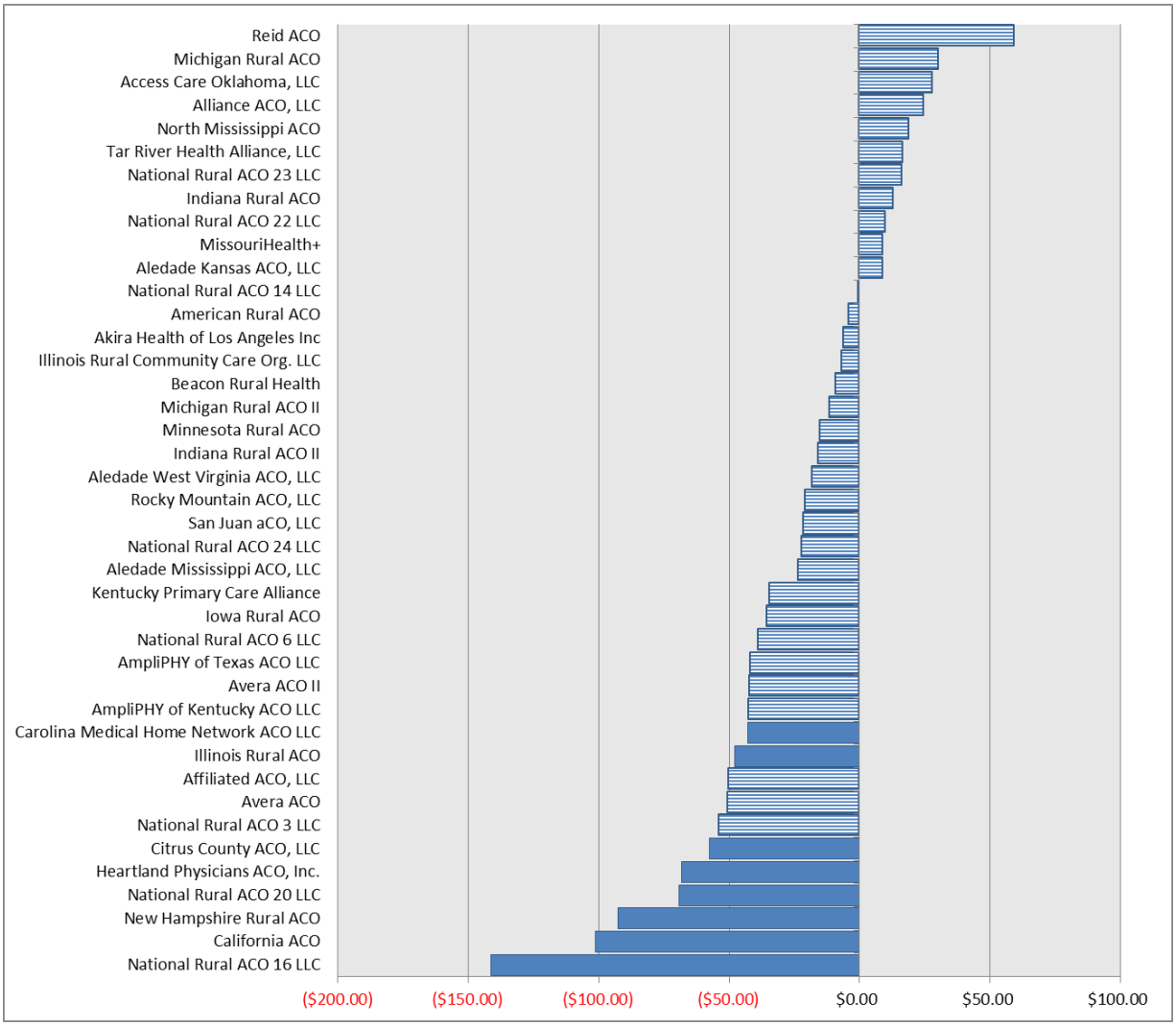
4.2.1 Total Medicare Spending

Analyses of spending in the first performance year showed lower total spending overall for Test 1 AIM ACOs compared to comparison beneficiaries in their markets. Although there was variation in findings across the Test 1 AIM ACOs, in aggregate we estimated net savings to the Medicare program of -$82.8 million after accounting for the 10 Test 1 AIM ACOs that earned shared savings in 2016.

Estimated impacts of AIM on total Medicare spending for each AIM ACO are shown in **Exhibit 4-1**. Estimated impacts are sorted by the size of increases or decreases in spending relative to its comparison group. Solid blue bars indicate statistically significant findings at the 5 percent level while striped bars indicate statistically insignificant findings. We found lower spending for the majority of Test 1 AIM ACOs in the first performance year (30 ACOs), with eight of them having statistically significantly lower spending (p-value < 0.05). None of the AIM ACOs with impact estimates that indicated more spending (positive estimates) were statistically significant. National Rural ACO 16 had the largest spending reductions, estimated to be -$141.46 per beneficiary per month (PBPM) in total Medicare spending (p-value < 0.01), or 13.5 percent of base Medicare spending for this ACO.[21] **Appendix 4F** lists the spending results by AIM ACO.

[21] Base spending represents total Medicare spending by AIM ACO beneficiaries during the baseline period net of the change in total Medicare spending of non-ACO FFS beneficiaries between baseline and performance years in ACO markets.

Exhibit 4-1: Impact Estimates of Total Medicare Spending per Beneficiary per Month for Test 1 AIM ACOs in Their First AIM Performance Year



Note: Solid bars denote statistically significant findings at the 5 percent level. Horizontal stripes indicate statistically insignificant findings.

Aggregating the findings across the Test 1 AIM ACOs (weighted by the size of the ACO in terms of assigned beneficiaries), we estimated that, on average, AIM ACOs had differentially lower spending (-$22.70 PBPM, 95% CI -$30.32 to -$15.08). When multiplying the PBPM lower spending by the number of beneficiaries' months and total number of assigned beneficiaries for each ACO, the aggregate lower spending was -$105.4 million, or 2.2 percent of base Medicare spending among beneficiaries assigned to AIM ACOs.[21] **Exhibit 4-2** reports these findings. It is important to emphasize that these aggregate results were calculated by averaging across the individual ACO estimates. In future analyses, we will estimate a pooled model to account for geographic differences between the various markets in which AIM ACOs are located, which we believe will provide a more robust estimate for the overall effect of AIM.

Exhibit 4-2: Averaged Total Medicare Spending Impacts across Test 1 AIM ACOs in Their First AIM Performance Year (N=41)

Confidence Interval (CI)	Per Beneficiary per Month Spending [a]	Aggregate Spending (Millions) [b]	Percent Savings of Base Spending [c]	Net Savings to Medicare Program (Millions) [d]	Percent Net Savings to Medicare Program
	-$22.70	-$105.4	2.2%	-$82.8	1.7%
95% CI	(-$30.32 to -$15.08)	(-$140.8 to -$70.0)	(1.5% to 2.9%)	(-$118.2 to -$47.5)	(1.0% to 2.5%)

[a] Weighted by AIM ACO size (number of assigned beneficiaries in the first performance year).
[b] Aggregate = total reductions over all beneficiaries and months.
[c] Base spending represents total Medicare spending by AIM ACO beneficiaries during the baseline period net of the change in total Medicare spending of non-ACO FFS beneficiaries between baseline and performance years in ACO markets.
[d] Net savings to Medicare program is calculated by subtracting earned shared savings from reductions in aggregate spending.

To calculate net savings to the Medicare program, we subtracted earned shared savings from aggregate reductions in spending. Since CMS made AIM payments to AIM ACOs, the true net savings to Medicare should theoretically remove any unrecouped AIM funds from savings. However, the calculations presented in this report assume that any outstanding AIM funds can be recouped in later years. In future analyses, we will subtract unpaid AIM funds from net savings to Medicare.

Ten Test 1 AIM ACOs earned shared savings in 2016, totaling $22.6 million (see **Appendix 3F** for ACO-specific earned shared savings). When we subtracted the $22.6 million in earned shared savings from aggregate spending reductions shown in **Exhibit 4-2**, we estimated that the Medicare program saved in net -$82.8 million in the first AIM performance year (95% CI -$118.2 million to -$47.5 million). These savings represented 1.7 percent (95% CI 1.0 to 2.5 percent in savings) of total Medicare spending among beneficiaries assigned to AIM ACOs.

To understand the drivers behind the estimated total spending, we examined the effect of AIM on spending and utilization across other claims-based measures.

4.2.2 Other Performance Measures

The impact estimates for other claims-based measures generally supported our findings on decreased spending by Test 1 AIM ACOs compared to their ACO market comparison groups. For instance, we found that most types of spending such as costly inpatient hospitalizations and post-acute care decreased while some physician spending increased.

If AIM is achieving the desired impacts of lowering costs while maintaining or improving quality of care, we should expect to observe changes in the mix of utilization, with decreases in utilization (and spending) in certain health care settings and increases in others. For example, we might expect reductions in costly acute hospitalizations and emergency department (ED) visits and potential increases in physician spending and utilization.

Impact estimates for the performance measures we examined are summarized in **Exhibit 4-3** below. **Exhibit 4-3** presents the average impact across all 41 Test 1 AIM ACOs, weighted by the number of beneficiaries assigned to each AIM ACO in the first performance year. Since averages can be dominated by large ACOs, the exhibit also provides the number of ACOs (out of 41) with negative estimates, the number with positive estimates, and the number of ACOs that were statistically significant at the 5 percent level in the corresponding direction. Relatively consistent patterns in the direction of impacts across the 41 AIM ACO provide important insights on the true impact of AIM. Estimates for each ACO are shown in **Appendix 4F**.

Exhibit 4-3: Summary of Impact Estimates for Performance Measures across Test 1 AIM ACOs in Their First AIM Performance Year (N=41)

Outcome (Scale)	Average Point Estimate [a]	# ACOs with Negative Point Estimates [b]	# ACOs with Positive Point Estimates [b]
Medicare payments (PBPM)			
Total	-$22.70	30 (8)	11 (0)
Acute inpatient	-$7.03	28 (2)	13 (0)
Physician services	$1.11	20 (5)	21 (6)
Hospital outpatient and ambulatory surgery centers	-$5.87	29 (11)	12 (0)
Skilled nursing facility	-$4.05	24 (9)	17 (3)
Home health	-$1.87	27 (10)	14 (0)
Durable medical equipment	-$0.37	21 (10)	20 (2)
Inpatient utilization			
Any acute hospitalization (%)	-0.48	30 (8)	11 (0)
# Acute hospitalizations	-0.01	29 (4)	12 (0)
All-cause 30-day readmission (%)	-0.09	28 (5)	13 (0)
Any ambulatory care sensitive admission (%)	-0.15	25 (3)	16 (0)
Emergency department and observation utilization			
Any ED visit not resulting in hospital admission (%)	-0.33	28 (6)	13 (0)
Any ED visit resulting in hospital admission (%)	-0.16	26 (7)	15 (5)
Any observation stays (inpatient or outpatient) (%)	-0.25	25 (12)	16 (3)
Post-acute care and hospice utilization			
# SNF days	-0.07	21 (8)	20 (4)
Any hospice use (%)	-0.10	26 (8)	15 (1)
Physician services utilization			
# Physician office-based E&M visits	0.10	14 (8)	27 (18)
# Imaging events	-0.04	24 (5)	17 (4)
# Procedures	0.01	25 (9)	16 (8)
# Tests	0.61	14 (8)	27 (24)
Mortality (%)	-0.11	25 (6)	16 (2)

[a] For non-payment measures denoted by (%), point estimates represent percentage points. Negative point estimates represent decreases in the performance measure when comparing AIM ACOs to their market comparison groups. Positive point estimates represent increases in the performance measure when comparing AIM ACOs to their market comparison groups.
[b] Count of negative or positive point estimates. The number of ACOs with statistically significant results at the 5 percent level is shown in parentheses.

Overall, we found that the direction, magnitude, and significance of the impact estimates were consistent with AIM reducing spending and potentially improving care quality among assigned beneficiaries. As discussed above, on average, spending on beneficiaries assigned to AIM ACOs decreased -$22.70 PBPM relative to comparison beneficiaries in the ACOs' markets. We estimated negative changes in spending for 30 of 41 AIM ACOs, and eight of these differences were significant at the 5 percent significance level or lower. Among the 11 positive point estimates, none was statistically significant.

Estimates were negative, on average, for all types of spending besides physician spending, indicating lower spending among AIM ACO beneficiaries relative to the comparison group. For these measures, the number of significant negative estimates was greater than the number of significant positive estimates (where there were any significant positive estimates), and well over half of all point estimates were negative in magnitude. For example, 28 Test 1 AIM ACOs were estimated to have relatively lower spending on acute inpatient stays, though only two of these AIM ACOs' estimates were statistically significant at the 5 percent level. This pattern contrasts with 13 AIM ACOs estimated to spend more on

acute inpatient stays, with no statistically significant estimates for this performance measure. There was a nearly 50/50 split in direction and significance of results for physician spending, yielding an average estimated increase of $1.11 PBPM.

Estimates for the utilization measures corroborated the spending results. On average, AIM was estimated to reduce the number of inpatient stays (including observational stays), ED visits, days spent in SNF care, and the probability of receiving hospice care, relative to the non-ACO beneficiaries in the ACO's market.[22] AIM was also associated with improvements measures related to patient safety: in approximately two-thirds of AIM ACOs, assigned beneficiaries were estimated to have reduced likelihood of 30-day hospital readmissions and hospitalizations for ambulatory sensitive conditions (ASC), relative to the comparison group, and most significant results indicated reductions rather than increases. The pattern was similar for mortality—most significant results indicated reductions in mortality rates rather than increases.

We did not find evidence of reduced E&M visits, imaging events, procedures, or tests. Although slightly more AIM ACOs saw reductions—rather than increases—in imaging events and procedures, there was a nearly equal split in the number of significant point estimates in either direction, and the average point estimates across all ACOs were close to zero. In contrast, total E&M visits and tests increased among assigned beneficiaries for nearly two-thirds of AIM ACOs, and the significant positive point estimates greatly outnumbered the significant and negative point estimates. These findings suggest that, on average, AIM ACOs increased physician visits and testing events relative to the comparison group, which could be consistent with increased intensity of outpatient care aimed at preventing more costly inpatient care.

4.3 Discussion

Our estimates suggest that in the first performance year, AIM appears to have lowered Medicare spending without reducing quality. Observed increases in utilization were consistent with greater reliance on care in outpatient settings, though it is an area for further investigation. **Chapter 6** provides an exploratory analysis of assigned beneficiaries' use of annual wellness visits and other care management visits that are covered by Medicare.

The findings across all 21 performance measures were consistent with the results being driven by AIM rather than occurring due to chance. For example, the increased number of E&M visits and tests was coupled with seemingly improved quality through reduced utilization and spending across virtually all outcomes (fewer 30-day hospital readmissions, hospitalizations for ambulatory care sensitive conditions, and deaths). However, we note the limitations in our findings as well. Given observed variation across AIM ACOs, these patterns may not hold for each individual AIM ACO. Furthermore, as with any quasi-experimental evaluation design, the rigor of the comparison group plays a critical role in determining the impacts. Our design rests on the assumption of parallel trends between the treatment and comparison groups. While the results from parallel trends tests lead to general confidence in our findings, they did not pass for every AIM ACO. Key next analytical steps include rigorously defining and estimating an AIM-wide impact model and conducting an investigation of ACO characteristics associated with lower spending or increased quality.

[22] Roughly two-thirds of AIM ACOs reduced the probability of an ED visit ending in an acute stay. However, while seven negative point estimates were statistically significant, five positive point estimates were also significant. Thus, among the utilization measures, the effect of AIM on ED visits with acute stays was not as clear-cut as the other utilization measures.

5. Comparing Test 2 AIM ACOs to Non-AIM SSP ACOs in Their First AIM Performance Year

Test 2 was intended to encourage existing, smaller ACOs to sustain Shared Savings Program participation and encourage transitioning to two-sided financial risk. To understand the effect of AIM payments separate from the effect of participating in the Shared Savings Program, we compared these AIM ACOs to similar non-AIM SSP ACOs on claims-based and ACO-level measures of quality in their first performance year. The first performance year was 2015 for four AIM ACOs and 2016 for the remaining two AIM ACOs. The six Test 2 ACOs, along with their analytical years and comparators are listed in **Exhibit 5-1**. Below, we describe the analytic approach, report the results, and discuss next steps, limitations, and conclusions.

Exhibit 5-1: Test 2 AIM ACOs

ACO Name	SSP Start Date	AIM Start Date	Baseline Years	First Performance Year	# of Comparison Non-AIM SSP ACOs
Physicians Collaborative Trust of Mississippi Gulf Coast [a]	Apr-12	Apr-15	2013, 2014	2015	5
Baroma Healthcare International [a]	Jan-13	Apr-15	2013, 2014	2015	14
The Premier Healthcare Network	Jan-13	Apr-15	2013, 2014	2015	14
Akira Health	Jan-13	Apr-15	2013, 2014	2015	14
Sunshine ACO	Jan-14	Jan-16	2014, 2015	2016	52
PremierMD ACO	Jan-14	Jan-16	2014, 2015	2016	52

[a] AIM ACO exited AIM at the end of 2015.

Key findings from comparing Test 2 AIM ACOs to similar non-AIM SSP ACOs are:

- We found an aggregate and non-statistically significant estimate of -$62.3 in per beneficiary per month spending reductions compared with non-AIM SSP ACOs. Of the six Test 2 AIM ACOs, one ACO had large statistically significant decreases in spending compared to comparable non-AIM SSP ACOs; this ACO also generated large shared savings from financial reconciliation in the same year.
- We did not find clear patterns of increases or decreases among the other spending and utilization performance measures between Test 2 AIM ACOs and comparable non-AIM SSP ACOs. Test 2 AIM ACOs performed better on the preventive health domain of ACO quality measures; however, they performed worse for some ACO quality measures in the domain of at-risk populations.
- Four of the six Test 2 AIM ACOs (66.7 percent) earned shared savings according to financial reconciliation in their first AIM performance year. The average amount of earned shared savings across the six Test 2 AIM ACOs was $2.4 million per ACO. In contrast, only 28 out of 71 (39.4 percent) of comparable non-AIM ACOs earned shared savings, and they had lower savings at an average of approximately $1.4 million.

5.1 Methods

As with the Test 1 AIM ACO analyses described in **Chapter 4**, we use a DID framework to compare Test 2 AIM ACOs with non-AIM SSP ACOs. The key difference is that the comparison for each Test 2 AIM ACO consists of the beneficiaries assigned to comparable non-AIM SSP ACOs, since Test 2 AIM ACOs were existing SSP ACOs when they began participating in the AIM model. This comparison group was

defined to examine whether AIM funds increase the ability of an SSP ACO to lower spending or improve quality. Our analytic approach is detailed below.

***Comparison Group*:** For each Test 2 AIM ACO and each performance measure, the comparable group of non-AIM SSP ACOs was those that started SSP in the same cohort, were in Track 1, did not participate in the AP ACO Model, and were of similar size in terms of assigned beneficiaries (fewer than 10,000 assigned beneficiaries in the first year of participating in SSP). These criteria yielded multiple comparison ACOs for each Test 2 AIM ACO. The last column of **Exhibit 5-1** shows the number of non-AIM ACOs in the comparison group for each AIM ACO. Those AIM ACOs that started SSP on the same calendar year have the same comparison group of non-AIM SSP ACOs. Beneficiaries assigned to the non-AIM SSP ACOs serve as the comparison group for each AIM ACO's beneficiaries. The list of non-AIM SSP ACOs selected for comparison is shown in **Appendix 5A**.

***Assignment Algorithm*:** To assign beneficiaries to SSP ACOs in the baseline and performance years, we used actual assignment for the corresponding year, as discussed in **Appendix 2C**. One caveat to this methodology is that we could not disentangle the effect of the change in assignment rules between 2015 and 2016 from participation in AIM, which may affect the two Test 2 AIM ACOs whose first AIM performance year was 2016 (see **Appendix 2C** for a description of the changes in assignment methodology between 2015 and 2016).[23]

***Baseline and Performance Time Periods*:** For Test 2 AIM ACOs, we used a baseline period of two years prior to AIM start, as shown in **Exhibit 5-1**. For the four AIM ACOs starting AIM in 2015, we used 2013 and 2014 as the baseline and 2015 as the first performance year.[24] For the two AIM ACOs starting AIM in 2016, we used 2014 and 2015 as the baseline and 2016 as the first performance year.

***Performance Measures*:** We examined the performance measures listed in **Exhibit 2-4** and described in **Appendix 2E**. Quality measures were available for all SSP ACOs but only at the level of each ACO.[25]

***Performance Measure Statistical Specifications*:** Claims- or enrollment-based performance measures were constructed according to the specifications described in **Appendix 4A**. For ACO quality measures, which are available at the ACO level only, we assessed the relationship between AIM participation and these outcomes by using a more descriptive approach.

***Risk Adjustment*:** We used the same risk adjustors for beneficiary-level analyses as described in **Appendix 4B** with the following exceptions: since the comparison group is not from the same market, we

[23] If the new assignment rules cause a shift in the beneficiary population in 2016 relative to prior years, and outcomes for the new beneficiary population are substantially different than those from prior years, our DID methodology may attribute to AIM changes that were actually caused by the new assignment algorithm. If the change in assignment rules between 2015 and 2016 affected all SSP ACOs equally, it would not be a concern. We shall further investigate any effects in a future report.

[24] Note that we treated calendar year 2015 as the first performance year for ACOs starting AIM in 2015 even though these ACOs did not start AIM until April 2015. We do not anticipate the three-month discrepancy to affect our findings substantively, as AIM 2015 starters were all prior Shared Savings Program participants and likely anticipated the start of AIM.

[25] In the first year of participation in the Shared Savings Program, ACOs are only required to report ACO quality measures; in subsequent years meeting certain quality measure performance thresholds affect earned shared savings. ACOs are still required to accurately report measures during the first year, and we continue to use this year as a component of the baseline period for comparing Test 2 AIM ACOs to comparable non-AIM SSP ACOs.

did not include PCSA fixed effects, but rather controlled for observed time-varying differences between the Test 2 AIM ACO and its comparison group of beneficiaries assigned to comparable non-AIM SSP ACOs. The additional factors we controlled for included rurality, primary care HPSA, mental care HPSA, and market favorability scores (see **Chapter 3.3** for descriptions of these variables).

***Covariate Balancing*:** Similar to the Test 1 AIM ACO analyses, we applied beneficiary-level entropy balancing weights in beneficiary-level analyses, so that covariates were balanced between the treatment and comparison groups (see **Chapter 4.1**).

For the ACO-level analysis of changes in quality between AIM ACOs and comparable non-AIM ACOs, we adjusted for differences across the two groups using ACO-level entropy balancing weights. The following eight ACO characteristics were averaged at the ACO level and used to construct these weights: percentage of assigned beneficiaries who are women, percentage of assigned beneficiaries who are white, percentage of assigned beneficiaries diagnosed with ESRD, percentage of Medicaid dually eligible-assigned beneficiaries, percentage of assigned beneficiaries who are disabled, mean three-year lagged HCC score, mean age, and mean number of months that beneficiaries were eligible for Medicare during the year in that ACO.[26]

***Analysis*:** For each measure and each AIM ACO, we computed the mean difference for each AIM ACO between the performance period and the baseline period and the analogous difference across comparable non-AIM SSP ACOs based on the weighting methodology described above. We then aggregated this "de-trended" difference in each outcome, by using the number of beneficiaries assigned in the performance year as a weight.

***Parallel Trends Testing*:** As described in **Appendix 4C**, we tested the parallel trends assumption for total Medicare spending for each AIM ACO. The results are summarized in **Appendix 5B**.

5.2 Results

We report findings from comparing Test 2 AIM ACO assigned beneficiaries to beneficiaries assigned to comparable non-AIM SSP ACOs. We present the estimated differences between AIM ACOs and comparable non-AIM SSP ACOs for total Medicare spending, other spending and utilization measures, and quality measures. The last section of this chapter provides limitations, conclusions, and a discussion of next steps.

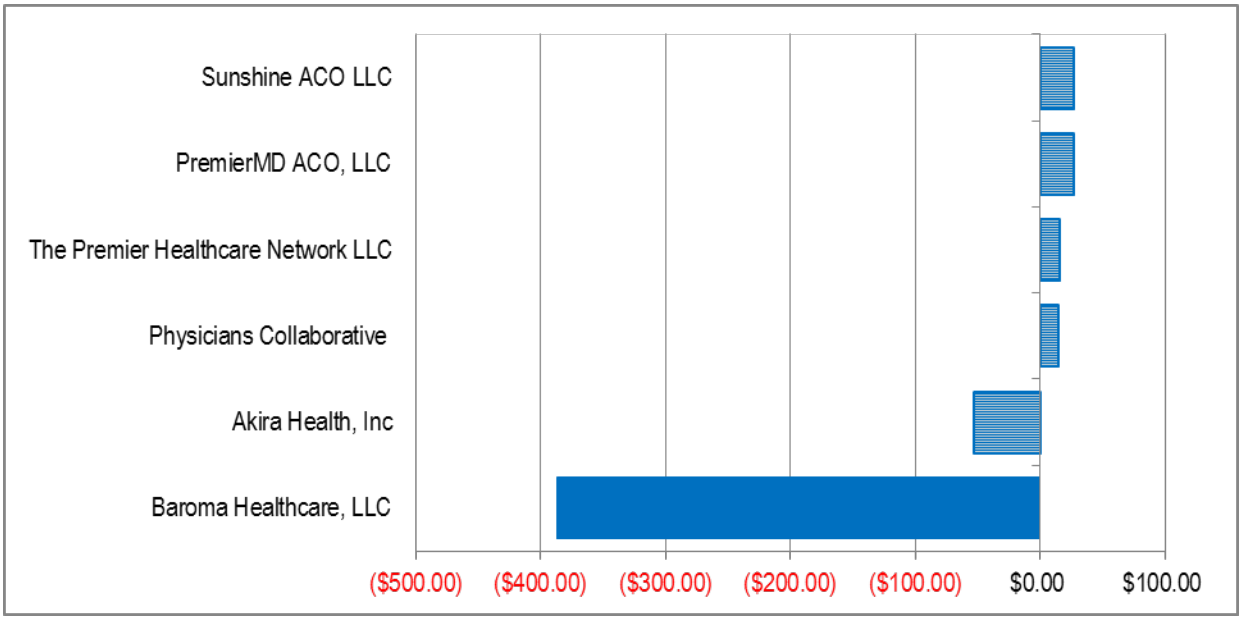
5.2.1 Total Medicare Spending

We did not find consistent differences in total Medicare spending between Test 2 AIM ACOs and comparable non-AIM ACOs.

Baroma Healthcare International was estimated to have a large and statistically significant reduction in spending of $387.00 PBPM compared with non-AIM SSP ACOs; however, no such pattern was found for the other Test 2 AIM ACOs (**Exhibit 5-2**). The reduction in Baroma Healthcare International's spending represented an 18.6 percent change relative to the baseline spending level. The estimate of -$52.50 PBPM for Akira Health was not statistically significant at the 5 percent level. Other Test 2 AIM ACOs were estimated to have higher relative spending (i.e. positive point estimates) compared to non-AIM SSP ACOs, but these findings were not statistically significant.

[26] Since AIM application decisions for Test 2 AIM ACOs did not consider geographic characteristics, we excluded these characteristics from entropy balancing.

Exhibit 5-2: Impact Estimates of Total Medicare Spending per Beneficiary per Month for Test 2 AIM ACOs in Their First AIM Performance Year



Solid bars denote statistically significant findings at the 5 percent level. Horizontal stripes indicate insignificant findings.

In aggregate, we estimated spending reductions for Test 2 AIM ACOs compared to non-AIM SSP ACOs across the six AIM ACOs, but they were not statistically significant (**Exhibit 5-3**). On average, Test 2 AIM ACOs had -$62.31 (95% CI -$134.65 to $10.03) PBPM less spending than non-AIM SSP ACOs. Since the confidence interval includes zero, we cannot conclude that Test 2 AIM ACOs had statistically significant lower spending than non-AIM SSP ACOs. Aggregating reductions in spending across beneficiary months and the number of assigned beneficiaries, we estimated that Test 2 AIM ACOs had -$27.0 million less spending compared with non-AIM ACOs in the first AIM performance year, or 4.1 percent of total Medicare spending for these AIM ACOs, but that this change was not statistically significant.

Exhibit 5-3: Averaged Total Medicare Spending for Test 2 AIM ACOs versus Non-AIM SSP ACOs in Their First AIM Performance Year (N=6)

Confidence Interval (CI)	Per Beneficiary per Month Spending [a]	Aggregate Spending (Millions) [b]	Percent Savings of Total Medicare Spending [c]
	-$62.31	-$27.0	4.1%
95% CI	(-$134.65 to $10.03)	(-$58.3 to $4.3)	(0.7% to 8.9%)

[a] Weighted by AIM ACO size (number of assigned beneficiaries in the first performance year).
[b] Aggregate = total reduction in spending over all beneficiaries and months.
[c] Base spending represents total Medicare spending by AIM ACO beneficiaries during the baseline period net of the change in total Medicare spending of beneficiaries assigned to comparable non-AIM SSP ACOs between baseline and performance years.

The Shared Savings Program financial results showed that four of the six Test 2 AIM ACOs earned shared savings in the first AIM performance year (67 percent), with Baroma earning the highest amount at $5,194,226 (see **Appendix 3F**). In contrast, 28 of the 71 non-AIM SSP ACOs in the Test 2 AIM ACO comparison group earned shared savings (39.4 percent).

5.2.2 Other Performance Measures

As with spending, no clear patterns emerged when comparing Test 2 AIM ACOs to non-AIM SSP ACOs on other spending and utilization measures.

Very few statistically significant differences were found when comparing Test 2 AIM ACOs to comparable non-AIM SSP ACOs on the spending and utilization measures (**Exhibit 5-4).** In this exhibit, we aggregated the findings for the six Test 2 AIM ACOs, weighting by ACO size in the performance period. ACO-level findings are reported in **Appendix 5C**. To provide context on the magnitude of the findings, we report the percentage of the base measure value represented by the estimate,[27] as well as the number of statistically significant results at the 5 percent level.

Overall, we did not find strong patterns in either direction relative to comparable non-AIM SSP ACOs. With the exception of SNF spending, all spending measures were estimated to decline on average, but none of these effects was statistically significant across all AIM ACOs. We detected the largest decrease in physician spending (-$12.19 PBPM on average across the six ACOs, though the two statistically significant estimates for the measure went in different directions—see **Appendix 5C**). In line with these results, we did not find many statistically significant results among utilization measures. Decreases in observation stays were found for Physicians Collaborative Trust of Mississippi Gulf Coast and Akira Health at the 5 percent level of significance (see **Appendix 5C**).

[27] Analogous to descriptions of base spending above, the base measure value represents the measure value by AIM ACO beneficiaries during the baseline period net of the change in the measure value of beneficiaries assigned to comparable non-AIM SSP ACOs between baseline and performance years. Specifically, we calculated base measure value using this formula: $AIM_{bl} + (COMP_{py} - COMP_{bl})$ where AIM_{bl} = measure value for AIM ACO assigned beneficiaries during the baseline period, $COMP_{py}$ = measure value for non-AIM SSP ACO beneficiaries during the performance year and $COMP_{bl}$ = average measure value for non-AIM SSP ACO comparison beneficiaries during the baseline period.

Exhibit 5-4: Test 2 AIM ACOs versus Non-AIM SSP ACOs Performance Measures in Their First AIM Performance Year (N=6)

Performance Measure	Estimate [a]	Base Mean [b]	Percent of Base Mean [c]	# ACOs with Significant Estimates [d]
Medicare payments (PBPM)				
Acute inpatient	-$1.75	$383.71	-0.46%	0
Physician services	-$12.19	$317.19	-3.84%	2
Hospital outpatient and ambulatory surgery centers	-$0.44	$181.53	-0.24%	0
Skilled nursing facility	$0.02	$116.49	0.02%	0
Home health	-$7.08	$72.92	-9.72%	1
Durable medical equipment	-$0.06	$14.56	-0.39%	1
Inpatient utilization				
Any acute hospitalization (%)	0.01	0.31	2.12%	0
# Acute hospitalizations	0.07	21.36	0.33%	0
All-cause 30-day readmission (%)	-0.13	3.28	-3.99%	0
Any ambulatory care sensitive admission (%)	0.10	5.10	1.94%	0
Emergency department and observation utilization				
Any ED visit not resulting in hospital admission (%)	0.32	19.12	1.70%	0
Any ED visit resulting in hospital admission (%)	0.11	17.87	0.62%	0
Any observation stays (inpatient or outpatient) (%)	-0.61	9.95	-6.09%	2
Post-acute care and hospice utilization				
# SNF days	0.03	2.17	1.16%	0
Any hospice use (%)	0.12	3.75	3.31%	0
Physician services utilization				
# Physician office-based E&M visits	-0.10	10.18	-1.01%	1
# Imaging events	-0.07	5.60	-1.26%	0
# Procedures	-0.37	8.03	-4.54%	1
# Tests	-0.05	21.55	-0.21%	1
Mortality (%)	-0.04	4.69	-0.92%	0

[a] Estimate from the DID model, showing the marginal increase or decrease in an outcome beneficiaries assigned to AIM ACOs compared to beneficiaries assigned to comparable non-AIM SSP ACOs in the first AIM performance year. For binary measures (%), the estimate represents the change in an outcome in terms of percentage points.

[b] The base measure value represents total Medicare spending by AIM ACO beneficiaries during the baseline period net of the change in total Medicare spending of beneficiaries assigned to comparable non-AIM SSP ACOs between baseline and performance years.

[c] The percent estimate is computed by dividing the point estimate by the base mean.

[d] Statistical significance is reported at the 5 percent level.

Consistent with changes in total Medicare spending, we found statistically significant changes in other spending and utilization measures for Baroma Healthcare International relative to non-AIM SSP ACO beneficiaries (**Exhibit 5-5**). The large reductions in total Medicare spending appeared to be driven by lower physician spending, estimated at -$40.10 PBPM, and home health spending, estimated at -$41.61 PBPM, which were both statistically significant, even at the 1 percent level. While changes in most utilization measures were not statistically significant at the 5 percent level, we observed a statistically significant (p-value=0.04) reduction in the number of tests.

We note that Baroma Healthcare International, located in Miami, Florida, was an outlier in terms of serving a sicker beneficiary population than other Test 2 AIM ACOs, which may have provided more opportunities to reduce spending. Beneficiaries assigned to Baroma in the first performance year had the most chronic conditions (3.5) and highest HCC score (1.50) of all AIM ACOs, on average, and the rate of ESRD (2.8 percent) was over 2.5 times higher than the average across all other AIM ACOs. Moreover, 69.2 percent of

beneficiaries assigned to Baroma were dually eligible for Medicaid, and 70.7 percent were Hispanic, indicating potential differences in socioeconomic status, in addition to differences in underlying health. Consequently, Baroma had high average baseline total Medicare spending, and the large relative reductions in total Medicare spending for this ACO may be related to starting with this high baseline spending.[28] Higher Medicare spending in Miami-Dade County, Florida compared to the rest of the country has been documented, [29] and thus is not surprising for Baroma's beneficiary population. We found that the beneficiaries assigned to Baroma spent substantially more than comparison beneficiaries in the baseline (even though comparison beneficiary spending was higher than for the average AIM ACO). Although we endeavored to select SSP ACOs that were similar to Baroma (and used weighting to enhance the balance), comparison SSP ACOs were located across the country, and it was likely that the resulting geographic differences could not be fully accounted for in our model. These differences likely contributed to the large pre-trends identified when testing parallel trends for Baroma, though the test was passed at traditional levels of statistical significance (see **Appendix 5B**).

Exhibit 5-5: Baroma Healthcare International versus Comparable Non-AIM SSP ACOs, 2015

	Estimate [a]	P-value
Medicare payments (PBPM)		
Total	-$387.00***	0.00
Acute inpatient	-$35.38	0.19
Physician services	-$40.10**	0.01
Hospital outpatient and ambulatory surgery centers	-$5.23	0.66
Skilled nursing facility	-$20.31	0.14
Home health	-$41.61***	0.00
Durable medical equipment	-$0.56	0.66
Inpatient utilization		
Any acute hospitalization (%)	-0.03	0.26
# acute hospitalizations	-1.36	0.43
All-cause 30-day readmission (%)	-1.16	0.29
Any ambulatory care sensitive admission (%)	-0.60	0.56
Emergency department and observation utilization		
Any ED visit not resulting in hospital admission (%)	0.35	0.85
Any ED visit resulting in hospital admission (%)	-1.12	0.49
Any observation stays (inpatient or outpatient) (%)	1.09	0.58
Post-acute care and hospice utilization		
# SNF days	-0.42	0.22
Any hospice use (%)	0.88	0.12
Physician services utilization		
# Physician office-based E&M visits	-0.44	0.32
# Imaging events	0.03	0.90
# Procedures	-1.20	0.05
# Tests	-2.69**	0.04
Mortality (%)	-0.13	0.86

[a] . For measures that are (%), the estimate represents the change in an outcome in terms of percentage points.
Note: *** and ** indicate 1 percent and 5 percent statistical significance, respectively.

[28] We are unable to further explore the drivers of Baroma's spending reductions because the ACO exited the Shared Savings Program at the end of 2015 and did not participate in any interviews with the evaluation team.

[29] "Unadjusted Medicare per capita spending in 2013 ranged from a low of around $6,000 in Josephine County, Oregon to a high of more than $16,000 in Miami-Dade County, Florida." See https://www.kff.org/report-section/the-latest-on-geographic-variation-in-medicare-spending-findings/

5.2.3 ACO Quality Measures

Test 2 AIM ACOs performed better than comparable non-AIM SSP ACOs in some areas (notably preventive health measures) and worse in others (notably at-risk population measures). Overall, we did not find evidence for drawing definitive conclusions on the effect of AIM on quality measures in the first AIM performance year.

Our comparison of Test 2 AIM ACOs and comparable non-AIM SSP ACOs on quality measures is markedly more descriptive than the methods used for analyzing claims-based measures since quality measures were assessed at the ACO-level only. As described in **Chapter 5.1**, we computed a descriptive DID value by subtracting the change in each quality measure between the baseline period and the first performance year for the Test 2 AIM ACOs from the analogous change in comparable non-AIM SSP ACOs weighted using entropy balancing. The findings for the six Test 2 AIM ACOs are reported in **Exhibit 5-6**. We report the mean outcome for AIM ACOs in baseline and performance periods, mean outcome for comparable non-AIM ACOs in baseline and performance periods, and the descriptive DID. A positive average DID value in **Exhibit 7-6** indicates that Test 2 AIM ACOs were performing better on the ACO quality measure compared with non-AIM SSP ACOs. The exception is for "Diabetes poor control (ACO#27)," where lower values are better—a negative average DID for this measure would indicate Test 2 AIM ACOs were performing better than non-AIM SSP ACOs. ACO-specific values are shown in **Appendix 7D**.

Test 2 AIM ACOs appeared to perform better by substantial amounts in the preventive health quality domain, as shown in **Exhibit 5-6**. They performed better by 17.96 percentage points on average on depression screening, by 14.34 percentage points on colorectal cancer screening, and by 9.51 percentage points on mammography screening than comparable non-AIM SSP ACOs. However, Test 2 AIM ACOs appeared to perform worse than non-AIM SSP ACOs with measures under the at-risk populations quality domain. Diabetes poor control was worse among AIM ACOs (-6.09 percentage points), as was ischemic vascular disease control (-4.31 percentage points), and coronary artery disease (-7.21 percentage points). The heart failure quality measure was worse (-9.28 percentage points) among AIM ACOs.

Baseline differences across ACOs may help to explain observed differences in performance on preventive health quality domain versus measures under the at-risk populations quality domain for AIM ACOs relative to non-AIM SSP ACOs. For instance, similar to comparable non-AIM SSP ACOs, Test 2 AIM ACOs improved on four out of five measures related to at-risk populations. Performance on those measures was similar in the performance year across the two types of ACOs. Lower performance in the baseline period among non-AIM SSP ACOs may explain their greater improvement between the baseline and performance period. At the same time, although performance on preventive health quality measures was lower in the baseline among Test 2 AIM ACOs than among non-AIM SSP ACOs, they still outperformed comparable non-AIM SSP ACOs in the performance period.

Exhibit 5-6: Aggregate Test 2 AIM ACOs versus Non-AIM SSP ACOs for Quality Measures in Their First AIM Performance Year (N=6)

ACO Quality Measure [a]	AIM PY [b]	AIM BL [c]	Non-AIM PY [d]	Non-AIM BL [e]	Avg. DID [f]
Patient/Caregiver Experience					
Getting timely care, appointments, and information (ACO #1)	80.06	80.61	76.84	78.53	1.14
How well your doctors communicate (ACO #2)	93.15	93.31	91.02	91.37	0.19
Patients' rating of doctor (ACO #3)	92.53	92.62	90.45	90.62	0.08
Access to specialists (ACO #4)	85.19	85.23	81.41	83.67	2.22

ACO Quality Measure [a]	AIM PY [b]	AIM BL [c]	Non-AIM PY [d]	Non-AIM BL [e]	Avg. DID [f]
Health promotion and education (ACO #5)	61.96	61.98	57.76	57.03	-0.74
Shared decision making (ACO #6)	75.59	75.18	74.37	73.34	-0.63
Health status/functional status (ACO #7)	69.30	69.46	70.60	69.76	-0.99
Preventive Health					
Depression screening (ACO #18)	55.48	22.96	41.95	27.38	17.96
Colorectal cancer screening (ACO #19)	53.94	39.79	50.15	50.35	14.34
Mammography screening (ACO #20)	63.34	52.48	57.18	55.83	9.51
At-risk Populations					
Diabetes poor control (ACO#27)	20.03	27.30	27.91	29.09	-6.09
Hypertension (blood pressure control) (ACO #28)	68.92	64.58	67.73	64.43	1.05
Ischemic vascular disease control (ACO#30)	76.81	72.66	73.62	65.16	-4.31
Heart failure: beta blocker therapy (ACO#31)	72.59	87.49	73.21	78.84	-9.28
Coronary artery disease (ACO#33)	79.39	74.69	73.72	61.81	-7.21

[a] For all quality measures except for diabetes poor control, higher values indicate better performance (the opposite is true for diabetes poor control). The depression remission quality measure (ACO #40) was not available in the baseline for most ACOs and is not reported here.
[b] AIM ACO first performance year (PY)
[c] AIM ACO baseline years (BL)
[d] Non-AIM SSP ACO performance year (PY)
[e] Non-AIM SSP ACO baseline years (BL)
[f] DID value is obtained by this formula: (AIM PY – AIM BL) – (non-AIM PY – non-AIM BL)

5.3 Discussion

In this chapter, we compared the set of AIM ACOs that existed in the Shared Savings Program prior to AIM to comparable non-AIM SSP ACOs. Non-AIM SSP ACOs likely differ from these Test 2 AIM ACOs in ways that cannot be fully captured by observable characteristics, so our findings must be interpreted with caution. The analysis was intended to provide insights on differences between AIM and comparable non-AIM SSP ACOs, conditional on SSP participation. The lack of overall observed differences in performance between the two groups may suggest that AIM interacts with the Shared Savings Program through other avenues. For example, it may be that the main incremental impact of the AIM model is mediated through participation—that is, by causing more providers to continue to participate in a program that strives to produce lower costs and quality improvement, rather than by enhancing performance in the program. To parse these effects and characterize the full impact of AIM for these ACOs in future analyses, the results will need to be interpreted in the context of participation effects.

We could not conclude that aggregate changes in spending between Test 2 AIM ACOs and comparable non-AIM SSP ACOs were statistically significantly different ($p < 0.05$). With the exception of one outlier Test 2 AIM ACO, we did not find consistent changes in spending or utilization among the remaining five Test 2 AIM ACOs relative to non-AIM SSP ACOs. At the same time, we found greater improvements in ACO quality measures of preventive health for Test 2 AIM ACOs. These measures were available only at the ACO level, so the analysis was descriptive in nature with no computation for statistical significance. Still, large improvements in preventive health quality measures among Test 2 AIM ACOs are encouraging. It is an area for further investigation. In fact, the next chapter provides an exploratory analysis of assigned beneficiaries' use of annual wellness visits and other care management visits that are covered by Medicare and likely affect preventive health care.

6. Exploratory Analysis of AIM Beneficiaries' Use of Wellness and Care Management Visits

In interviews with AIM ACO leadership, the most frequently mentioned focus of care management efforts included increasing the use of three types of services that have more recently been covered by Medicare:

- Annual wellness visits (AWVs): provided annually to Medicare beneficiaries for the purpose of planning preventive care and billable starting in 2011
- Chronic care management visits (CCM): available to help beneficiaries manage two or more chronic conditions expected to last more than a year and billable starting in 2015 (2016 for FQHCs)
- Transitional care management (TCM) services: available to help beneficiaries with transitions from inpatient to a community setting after discharge from inpatient and some outpatient stays and billable starting in 2013

In this chapter, we examine the use of these services among AIM ACO and comparison group beneficiaries to assess whether the use of these services changed between 2015 and 2016, the start of AIM for most AIM ACOs.

Key findings from exploring AIM ACO use of wellness and care management visits include:

- Beneficiaries assigned to AIM ACOs started with higher rates of wellness and transitional care management visits compared to other FFS beneficiaries in ACO markets and also had higher percentage increases. From 2015 to 2016 (the first performance year for most AIM ACOs), the rate of increase in use of annual wellness visits was 40 percent for AIM ACO beneficiaries versus 28 percent for non-ACO beneficiaries. For transitional care management services, the rate of increase was 60 percent for AIM ACO beneficiaries versus 43 percent for non-ACO beneficiaries.
- Although beneficiaries in AIM ACO markets experienced a slightly higher percentage increase in the rate of chronic care management visits, AIM ACO beneficiaries still had higher rates of this service type in 2016 (122 versus 118 visits per 1,000 beneficiary years).
- Increases in utilization of these types of care were not surprising since they can enhance primary care for beneficiaries attributed to ACOs; however, ACOs may be also increasing their use as part of an overall strategy to increase revenues while boosting the likelihood of beneficiary retention in the ACO the following year.

6.1 Methods

For each of the 45 AIM ACOs participating in the model in 2016, we identified ACO-assigned beneficiaries in the 2016 performance year and depending on the ACO's SSP start year, ACO-assigned beneficiaries in the baseline or performance year of 2015 as well as the non-ACO FFS beneficiaries representing the comparison group in the ACOs' markets for each year (see **Chapter 2.2** for more information on the comparison group). We used carrier and outpatient claims to identify codes listed in **Appendix 6A** attributed to each of these groups of beneficiaries.

We also undertook semi-structured interviews with ACO leadership from October to December 2016 to explore their impressions of AIM and ACO implementation experiences.

6.2 Results

ACOs are well positioned to provide AWVs, CCM, and TCM services because of their focus on improving primary care delivery, care coordination, and transitions between care settings. Through the interviews, the ACO leadership indicated that the provision of beneficiary-level Medicare data on ACO-assigned beneficiaries as part of their participation in the Shared Savings Program helped them conduct outreach for these services. Increasing use of these services can increase practice revenues and may improve quality of care and avoid other, costlier utilization, such as ED visits or readmissions.

Use of these services was cited by ACO leadership in ACOs affiliated with management companies and independent ACOs. Specifically, nearly two-thirds of AIM ACOs said that increasing the use of at least one of these services was the focus of their care management efforts. ACO leadership in nearly all Caravan-managed AIM ACOs described a focus on promoting at least one, and typically all three, of these services as care management interventions implemented or enhanced since the start of AIM. For example, several ACOs with some degree of management company involvement in their operations noted the following:

"We didn't have any workflows when we started this, such as to follow patients once they left our four walls. But we've now worked with case management to set up a workflow so that we're notified so that we can follow them for the next 30 days. So, that was an intervention that we did—doing that transition in care. Once followed through that 30 days, then identifying they do have 2+ diagnoses that put them at higher risk, so let's following them through chronic care management, so then we're following them from that standpoint."

"Our big focus for 2016 is Medicare wellness visits. We attended the first quarterly conference, and there was education and encouragement from Caravan on how to do wellness visits in a systematic fashion. The concept was that we could have RN coordinators perform a large component of wellness visits and double book it over another appointment. That way, the provider only spends a few minutes with patients (versus 1 hour), which was huge barrier for Medicare wellness visits across the country. We took it on as a challenge and achieved it quite successfully, as one our RN care coordinators does five Medicare wellness visits a day."

"Because of AIM funds, 14 out of 14 practices are doing care management. They wouldn't otherwise be doing it. I am talking about building the chronic care management, doing the outreach for annual wellness visits, and TCMs. Before the ACO came along, they did not know about TCMs. It really has helped."

We found wide variation in the use of AWV, CCM, and TCM visits among AIM ACO beneficiaries, as shown in **Exhibit 6-1**. The distribution among AIM beneficiaries was wider than among beneficiaries in comparison groups, with AIM ACOs generally billing for these services at a higher rate than the comparison group. The most notable exception is CCM visits, with half of AIM ACOs billing proportionally fewer of them than the comparison group. Both AIM-assigned and comparison

beneficiaries had a higher rates of AWV use compared with the Medicare FFS average in 2015 of 18.8 percent.[30] **Appendix 6B** provides the value for each AIM ACO and its comparison beneficiaries.

Exhibit 6-1: Annual Wellness and Care Management Visits (per 1,000 Beneficiary Years) in 2016

	Minimum	25th Percentile	Median	75th Percentile	Maximum
Annual wellness visits (AWV)					
AIM	102	212	350	481	809
Comparison	79	172	211	255	414
Chronic care management visits (CCM)					
AIM	0	5	19	112	1,404
Comparison	2	21	51	90	252
Transitional care management (TCM)					
AIM	2	17	33	60	142
Comparison	4	16	22	32	63

Between 2015 and 2016, aggregating over all AIM ACOs and their respective comparison populations, we found an increase in the use of AWVs and CCM and TCM visits in both groups, with beneficiaries assigned to AIM ACOs using more of these services, on average in 2015 and 2016 (**Exhibit 6-2**). Among individual ACOs, the use of AWV and CCM visits per 1,000 beneficiary years increased for nearly all AIM ACOs and their comparison groups.[31] Specifically, 39 AIM ACOs showed growth in the number of AWVs; 44 AIMs showed growth in the number of CCMs; and 39 showed growth in the number of TCMs. While utilization has increased for all of these services from 2015 to 2016, the overall rate of increase in CCM visits is lower for AIM ACOs than comparison group providers. However, a few ACOs showed notably higher rates of use of CCMs than other ACOs in both 2015 and 2016, and these outliers were not present among the comparison group beneficiaries. Given that 2015 was the first year that CCMs were billable, growth in CCM visit utilization among both AIM ACOs and comparison groups is not surprising, and highlights the usefulness of continuing to monitor these trends as more data become available.

Exhibit 6-2: Change in Annual Wellness and Care Management Visits (per 1,000 Beneficiary Years) from 2015 to 2016

	2015	2016	Percent change, 2015–2016
Annual wellness visits (AWV)			
AIM	273	382	40
Comparison	202	258	28
Chronic care management visits (CCM)			
AIM	48	122	154
Comparison	41	118	188
Transitional care management (TCM)			
AIM	26	41	60
Comparison	23	32	43

[30] Ganguli, I., Souza, J., McWilliams, M., Mehrotra, A. (2018) "Practices Caring for the Underserved are Less Likely to Adopt Medicare's Annual Wellness Visit," *Health Affairs*, 37(2): 2830291.

[31] Although FQHCs could bill for CCMs in 2016, the leadership of some ACOs with health centers noted in their interviews that health centers might not consistently bill separately for these services.

6.3 Discussion

Our preliminary analyses showed that beneficiaries assigned to AIM ACOs had higher rates of annual wellness and care management visits as well as higher growth in these visits between 2015 and 2016. These results are consistent with the finding among Test 1 AIM ACOs of an increase in E&M visits relative to FFS beneficiaries not assigned to an ACO. We will continue to monitor the use of AWV, CCM, and TCM services in the second AIM performance year, including whether ACO providers provide more of these types of visits to all their beneficiaries (not just assigned ones) than non-ACO providers. For example, a recent study found that 30.0 percent of patients attributed to practices participating in an ACO had AWVs compared to 20.1 percent of patients attributed to practices not participating in an ACO.[30] Future work will also examine whether higher ACO utilization of these services is related to continued participation in the Shared Savings Program. Evidence from interviews with AIM ACOs suggests that ACOs plan to use the increased revenue from these services to fund some of the care coordination activities they have undertaken using AIM finding. Other future analyses will explore whether changes in the use of AWVs and CCM services affect year-over-year attribution of beneficiaries to ACOs. In a prior analysis, we found that beneficiaries who were not reassigned to an ACO the subsequent performance year were more likely to be sicker on average than those who were reassigned to an ACO.[32] Increased use of CCM services might help to reduce year-to-year churn of ACO beneficiaries who may benefit from ACOs' care management services.

[32] L&M Policy Research. (2016). "Evaluation of CMMI Accountable Care Organization Initiatives." https://innovation.cms.gov/Files/reports/pioneeraco-finalevalrpt.pdf.

7. AIM Payments

AIM funds provided resources to stimulate care transformation to encourage continued participation in the Shared Savings Program. Tracking internal ACO expenditures gives insights into how ACOs operate and how they plan to achieve the ultimate goals of better health and lower costs. Such spending is of particular importance to ACOs in AIM, as they presumably needed the start-up AIM funds to begin ACO operations or sustain and improve ACO operations. In this chapter, we analyze AIM-required quarterly expense reports, which provide detailed (albeit self-reported) information on AIM ACOs' use of AIM funds and other internal ACO funds. We also show findings from a non-AIM SSP survey fielded in the fall of 2016 to contrast categories of internal AIM expenditures with categories of non-AIM SSP ACO expenditures to the extent possible.

Key findings on AIM payments and their uses:

- More than 60 percent of the ACOs' overall reported spending on care transformation consisted of ACO internal funds, with the remainder from AIM payments. This was true for both Test 1 and 2 AIM ACOs. However, the amount of internal spending reported varied widely across AIM ACOs.
- The largest category of AIM spending was on administrative and executive activities. Given that most AIM ACOs are rural and small, this finding may reflect AIM ACOs enhancing the management infrastructure needed to implement ACO strategies.
- High spending for administrative and executive functions seemed to be related to the use of management companies. The relationship between ACOs and management companies continues to be an area of interest, especially related to whether the investments in management companies and contracted labor are sustainable after AIM funding ceases.

7.1 Expense Reports

As a requirement of AIM participation, ACOs were required to document their planned use of AIM payments in "spend plans." Following CMS approval of their spend plans, AIM ACOs submitted quarterly "expense reports" detailing how AIM funds were spent in the quarter.

According to AIM requirements, acceptable uses of AIM funding include but are not limited to:

- Investments in infrastructure such as the expansion of HIT systems to include a patient portal and/or data warehouse capabilities.
- Hiring of staff such as nurse case managers, executives, or project directors to oversee the implementation of care coordination efforts.

Unacceptable uses of AIM funding include:

- Augmenting provider salaries or providing bonuses to executives or administrators.
- Imaging equipment (use of funds for other equipment are scrutinized carefully as well, but not necessarily prohibited).

In addition, ACOs must report internal ACO expenditures on investments in infrastructure and care improvement. These ACO funds are exclusive of the funds furnished by AIM and are necessary to give CMS context of an ACO's overall spend plan. For example, the ACO may want to begin a large care coordination initiative and hire several care coordinators, only a few of which would be hired with AIM

funds. The ACO would appear to be under-staffing the project if it did not report the hires made with its internal funds as well.

It is important to note that ACOs may also spend on activities directly related to ACO performance without reporting them on expense reports. Thus, we cannot conclude that the lack of a particular purchase or activity on the ACOs' expense reports indicates that the ACO incurred no costs in that area. Nevertheless, the analysis of the expense reports below provides valuable (and rare) insight into the types of items or activities considered by ACOs to be vital to the goals of AIM and the Shared Savings Program more generally.

7.2 Data and Methods

We examined all available final approved expense reports from Q2 2015 to Q2 2017 and preliminary expense reports for Q3 2017 still subject to CMS approval. Two AIM ACOs, both of which started in 2015, had expense reports for Q2 2015 to Q3 of 2017.[33] Two additional ACOs that started AIM in 2015 ended participation in the Shared Savings Program before the end of the year, were required to remit all AIM funds received, so their expense reports were not analyzed. The remaining 43 AIM ACOs had expense reports for Q1 2016 to Q3 2017. The expense reports consist of self-described line item expenses categorized into six broad categories defined by CMS:

1. Clinical staff
2. Non-clinical staff
3. Contracted labor
4. IT (software and hardware)
5. Education and training
6. Other

The line item expenses varied in their degree of detail, and different ACOs may describe the same expense differently. We reviewed each line item and expense report category associated with nonzero funds and reclassified line item expenses into the following "Abt categories":

1. *Care of patients*: This Abt category incorporates many of the line items categorized as clinical staff using the expense report categories. Depending on the line item description, this category also includes any line items related to care coordination, care management, or medical directors, even if the expense report categories for these line items are "contracted labor," "non-clinical staff," or "other." We further split this category into the following subcategories:
    a. *Care coordination and disease management*: This subcategory includes spending directly related to care coordination and disease management. Expenses with the line item description "care coordinator" or "disease management" were put in this subcategory.
    b. *Care management*: This subcategory encompassed other clinical activities, particularly those related to utilization management efforts. Included in this subcategory would be spending on

[33] AIM funds are distributed over the course of 24 months. Test 2 AIM ACOs that began AIM in April 2015 received AIM funding through March 2017 but had until the end of March 2018 to spend AIM funds and therefore continued to report expenses through Q3 2017.

medical directors and chief medical officers. Expenses with the line item description "case manager" or "case management" were included in this subcategory.

2. *Administrative/executive*: This Abt category incorporates many line items previously designated as "non-clinical staff." These include expenses for ACO directors, executives, and administrative assistants, for example. We also classified into this category any line items related to administrative costs, including rent, insurance, and management company fees.
3. *Technology*: This Abt category remained similar to the expense report categories. We added any line items related to technology use, analytics, and website development. Some of these line items were previously categorized into "other" or "contracted labor." We further split this category into two subcategories:
    a. *IT-buy*: This subcategory includes technology purchases such as electronic health record interfaces, spending on licenses for software, data storage, and data sharing costs.
    b. *IT-use*: This subcategory includes ongoing data analysis with IT for expense line items such as "claims analysts" and "data analysts."
4. *Additional programs (care redesign)*: This Abt category included line items such as exercise programs, anti-smoking programs, telehealth, lean analysis, practice transformation specialists, and social workers, among others. This category was intended to capture any programs or investments made by the ACO to change the services and processes delivered at the point of care systemically for patients.
5. *Education and training*: The majority of line items under the CMS education and training category remained in this category. We included other line items that referred to training or education, including travel to conferences and leadership coaching.

Since expense line items are self-reported, they vary in their degree of detail; our best judgment was used to classify the line items into Abt categories. While this approach is likely sufficient for discerning broad patterns in spending on ACO infrastructure and activities, we cannot conclude, for example, that a particular ACO did not generate any expenditures on practice transformation, while other ACOs did.

Below, we describe findings aggregated across AIM ACOs for spending through the third quarter of 2017. Since ACOs vary in their size, we report spending in PBPM terms to better understand patterns across categories. That is, for each ACO, we aggregated spending by category and then divided the aggregated spending by the total number of beneficiaries assigned to each ACO across performance years included in the expense reports to obtain a per-beneficiary spending amount.[34] We then divided the number of beneficiaries by the number of months of expense report information for each ACO (nine months in 2015 and 2017 and 12 months in 2016). To calculate average PBPM spending across all AIM ACOs in a certain category, we took an unweighted average of PBPM spending for AIM ACOs with any spending in the category.

[34] The number of beneficiaries assigned to each ACO used to calculate per beneficiary spending amounts were obtained from the official assignment numbers reported in the MDM extract file. Note that these numbers differ slightly from the assigned beneficiaries used in the impact analyses reported in **Chapters 4 and 5**. Official assignment figures were used in this analysis because AIM payment amounts to each AIM ACO were based on the number of officially assigned beneficiaries. The total number of beneficiaries covers two assignment years for most ACOs. For example, if the ACO started AIM in January 2016, the total number of assigned beneficiaries is the number in 2016 and the number in 2017 summed together.

Not all ACOs reported spending in every category. For example, only 37 of 45 ACOs reported any expense line items that could be categorized into "education or training" expenses. In describing spending by category in the exhibits below, we only included ACOs with any spending within the category. Thus, the figures reported are higher than would be calculated if we set ACO spending to zero for categories in which they have no spending and included them in the average. Since lack of reported spending in a particular category does not necessary mean the ACO did not spend its own funds on those activities, we decided that it was better to exclude ACOs with zero spending in a particular category rather than set their spending to zero.

7.3 Results

Overall, Test 1 AIM ACOs were larger and received more in AIM funds than Test 2 ACOs, so they tended to spend more, both in terms of AIM funds and internal ACO funds. In particular, Test 1 AIM ACO spent more on care coordination and care redesign programs than Test 2 AIM ACOs. Since Test 1 AIM ACOs were new to the Shared Savings Program, unlike Test 2 AIM ACOs, spending more in these areas to start ACO activities is not surprising. We also found that physician-only ACOs tended to spend more on care coordination than ACOs that include hospitals or FQHCs and RHCs. AIM ACOs using management companies spent substantially more on administrative and executive functions, as well as on IT.

AIM payments from expense reports totaled $58,340,797 through Q3 2017 (**Exhibit 7-1**). Internal ACO spending added an additional $104,316,486, for a total of $162,657,486 reported by AIM ACOs in expense reports through Q3 2017. AIM payments to Test 1 AIM ACOs account for 94.7 percent of total AIM payments ($55,225,22 divided by $58,340,797).

Exhibit 7-1: AIM ACO Total Spending from Expense Reports, Q2 2015 to Q3 2017

	Test 1 AIM ACOs (N=41)	Test 2 AIM ACOs (N=4)	All AIM ACOs (N=45)
AIM funds	$55,225,922	$3,114,875	$58,340,797
ACO funds	$97,362,542	$6,954,147	$104,316,688
Total	$152,588,463	$10,069,022	$162,657,486

Source: AIM expense reports from Q2 2015 through Q3 2017.

On average, Test 1 AIM ACOs spent $1,346,974 and Test 2 AIM ACOs spent $778,719 in AIM funds through Q3 2017 (**Exhibit 7-2**). As discussed in **Chapter 2**, Test 1 and 2 AIM ACOs received different levels of AIM funds: Test 1 AIM ACOs received $250,000 and $36 per beneficiary up-front and then $8 PBPM while Test 2 AIM ACOs only received $36 per beneficiary up-front and then received $6 PBPM. Thus, Test 2 AIM ACO spending of AIM funds was unsurprisingly lower than Test 1 AIM spending. There were also only four Test 2 AIM ACOs analyzed, so they would not have as many opportunities to vary in their spending as the 41 Test 1 AIM ACOs.

Test 1 AIM ACOs reported spending an additional $2,374,696 of their own funds for related AIM-related activities, on average. Thus, total spending reported for Test 1 AIM ACOs was $3,721,670, on average. The ACOs ranged from a minimum of $325,648 to a maximum of $11,650,658. Test 2 AIM ACOs reported spending $1,738,537 of their own funds and a total of $2,517,256 when including AIM funds. Total spending ranged from $615,435 to $6,849,977. Spending information for each AIM ACO is reported in **Appendix 7A**.

The bottom three rows of **Exhibit 7-2** show that, on average, Test 1 AIM ACOs spent in total $17.80 PBPM: $6.68 in AIM funds and $11.12 in ACO funds. Total PBPM spending ranged from $2.26 to $43.99. Test 2 AIM ACOs spent in total $13.49 PBPM: $4.32 in AIM funds and $9.17 in ACO funds. Total PBPM spending ranged from $5.17 to $29.57.

Exhibit 7-2: AIM ACO Spending from Expense Reports by Test Type – 45 AIM ACOs from Q2 2015 to Q3 2017

	Test 1 AIM ACOs (N=41)				Test 2 AIM ACOs (N=4)			
	Mean	Min	Median	Max	Mean	Min	Median	Max
AIM funds	$1,346,974	$309,021	$1,344,236	$2,226,746	$778,719	$262,949	$748,170	$1,355,586
ACO funds	$2,374,696	$0	$1,966,035	$10,069,613	$1,738,537	$147,069	$656,343	$5,494,391
Total funds	$3,721,670	$325,648	$3,177,251	$11,650,658	$2,517,256	$615,435	$1,301,805	$6,849,977
PBPM AIM funds	$6.68	$2.15	$6.65	$12.37	$4.32	$2.56	$4.44	$5.85
PBPM ACO funds	$11.12	$0.00	$8.47	$35.72	$9.17	$1.05	$5.95	$23.72
PBPM total funds	$17.79	$2.26	$15.15	$43.99	$13.49	$5.17	$9.61	$29.57

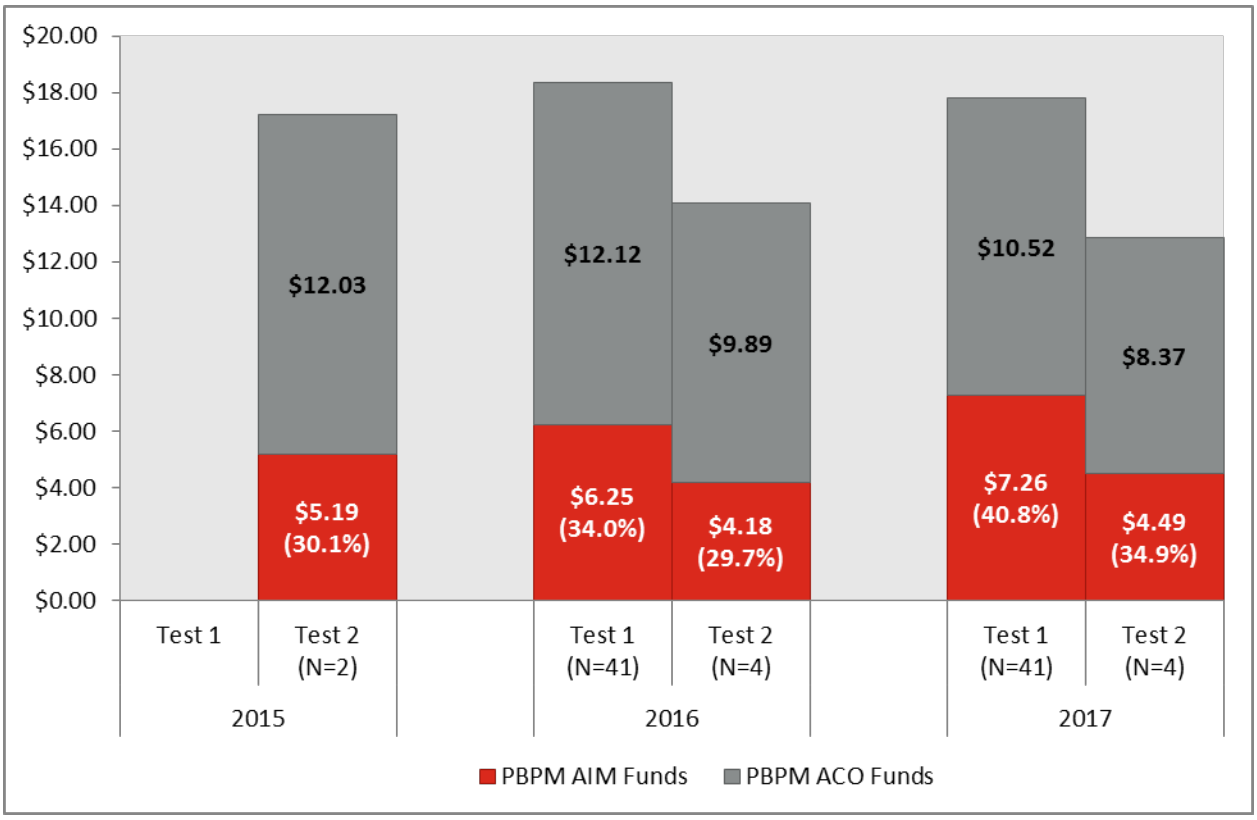
Source: AIM expense reports from Q2 2015 through Q3 2017.
Notes: Unweighted averages across 45 AIM ACOs. PBPM spending calculated by dividing aggregate spending during the time period by the total number of assigned beneficiaries and total number of months. “AIM funds” are spending from AIM payments; “ACO funds” are spending from internal ACO funds.

National Rural ACO 14 spent the greatest total amount in aggregate—$11,650,658 (see **Appendix 7A**). The majority of this ACO’s spending was from internal ACO funds ($10,069,613 in ACO spending and $1,581,044 in AIM spending). This ACO was relatively large—14,557 assigned beneficiaries in 2016. In terms of PBPM spending, it spent $38.42 PBPM in total, well above the Test 1 AIM ACO average of $17.80. However, only $5.21 PBPM were from AIM funds; the remaining $33.20 PBPM were from the ACO’s own internal funds.

National Rural ACO 6 spent the most per beneficiary per month in total—$43.99 PBPM. This ACO also had the highest per beneficiary per month spending from internal ACO funds—$35.72 PBPM—and spent $8.27 PBPM in AIM funds. Indiana Rural ACO II spent the most AIM funds per beneficiary per month—$12.37. However, it spent below the Test 1 AIM ACO average in ACO funds—$9.70 PBPM—and spent $22.07 PBPM in total. The AIM ACO with the lowest PBPM spending was AmpliPHY of Kentucky ACO, which spent $2.26 PBPM in total, $2.15 of which were AIM funds and $0.12 were internal ACO funds.

Per beneficiary per month AIM and ACO spending for Test 1 and 2 AIM ACOs by year is shown in **Exhibit 7-3**. Average AIM spending increased from $6.25 PBPM in 2016 to $7.26 PBPM in 2017 for Test 1 AIM ACOs. The percentage of spending from AIM funds increased from 34.0 percent in 2016 to 40.8 percent in 2017 for Test 1 AIM ACOs. Relative to Test 1, PBPM AIM spending was lower for Test 2 AIM ACOs in all three years, as was the percentage of spending from AIM funds.

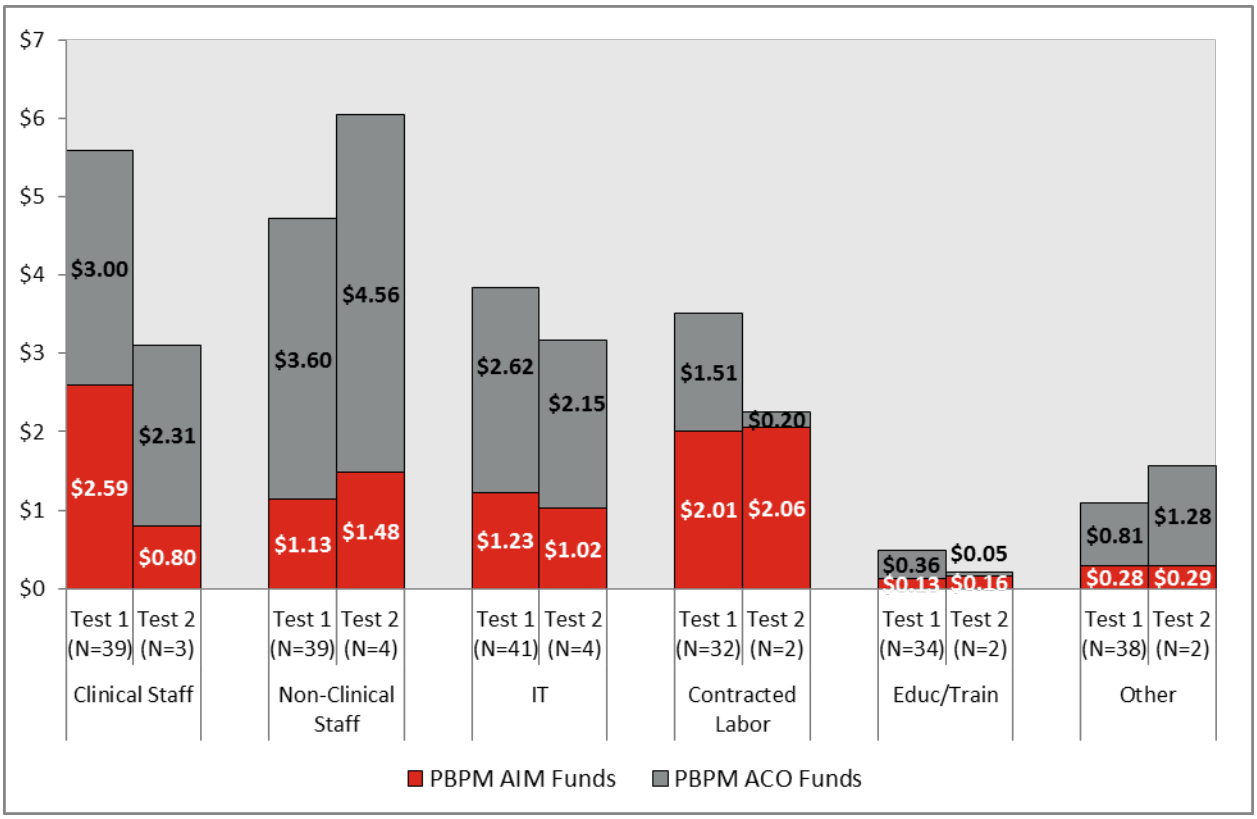
Exhibit 7-3: AIM ACO PBPM Spending by Year (N = 45 ACOs)



Source: AIM expense reports from Q2 2015 through Q3 2017.
Notes: The number of ACOs in each category differs because not all ACOs reported any spending in each category. Percent of total PBPM spending in parentheses.

AIM PBPM average spending across Test 1 and 2 AIM ACOs for each of the expense report categories is shown in **Exhibit 7-4**. For Test 1 AIM ACOs, on average, $5.59 PBPM was spent on "clinical staff," 46.4 percent of which was spent from AIM funds. "Education and training" had the lowest per-beneficiary spending—$0.49 PBPM for Test 1 AIM ACOs and $0.20 PBPM for Test 2 AIM ACOs. AIM funds constituted the largest proportion of the "contracted labor" category, 57.0 percent of total spending for Test 1 AIM ACOs and 91.2 percent of total spending for Test 2 AIM ACOs for those that use any contracted labor. Contracted labor, discussed further below, generally covered non-clinical expenses related to administrative and executive functions and data analytics.

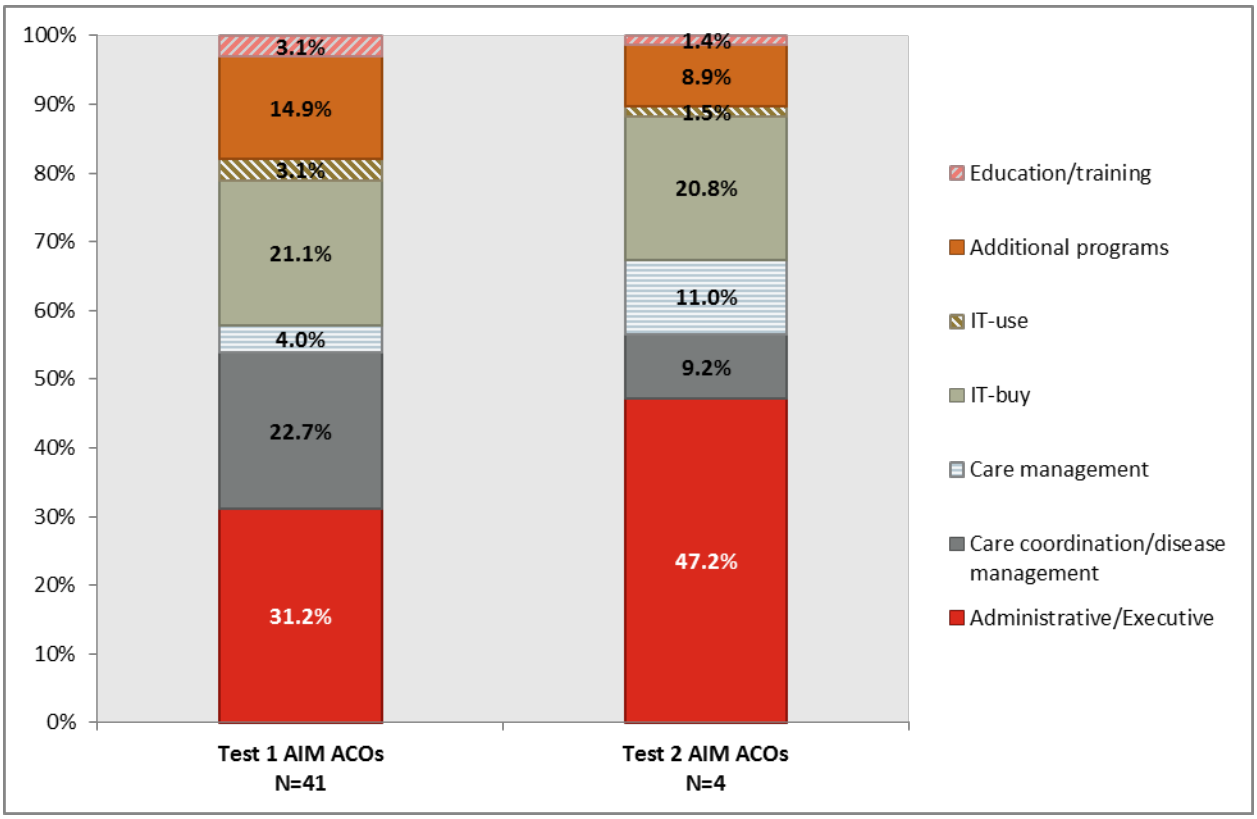
Exhibit 7-4: AIM ACO PBPM Spending by Expense Report Categories (N = 45 ACOs)



Source: AIM expense reports from Q2 2015 through Q3 2017.
Notes: The number of ACOs in each category differs because not all ACOs reported any spending in each category. Educ/Train = education and training; IT = IT (software and hardware).

The percentage of total spending by Abt category separately for Test 1 and 2 AIM ACOs is shown in **Exhibit 7-5**. On average, Test 1 AIM ACOs spent 31.2 percent of total funds on "administrative and executive" activities compared to 47.2 percent for Test 2 AIM ACOs on average. It was the largest category for both Test 1 and 2 AIM ACOs. Test 1 AIM ACOs spent a larger share on "care coordination/disease management" activities (22.7 percent) compared with Test 2 AIM ACOs (9.2 percent), on average. Test 1 AIM ACOs on average spent a smaller share on "care management" (4.0 percent) compared with 11.0 percent for Test 2 AIM ACOs on average. Test 1 and 2 AIM ACO spent similar shares of total spending on "IT-buy" activities while Test 1 AIM ACOs spent a slightly higher share of total spending on "IT-use" activities (3.1 percent versus 1.5 percent for Test 2 AIM ACOs). On average, Test 1 AIM ACOs spent 14.9 percent of total spending on "additional programs" and only 3.1 percent on "education and training." Shares of spending in these categories were lower for Test 2 AIM ACOs—8.9 percent of total spending on "additional programs" and 1.4 percent on "education and training."

Exhibit 7-5: Total AIM ACO PBPM Spending Percentages by Abt Categories (N = 45 ACOs)

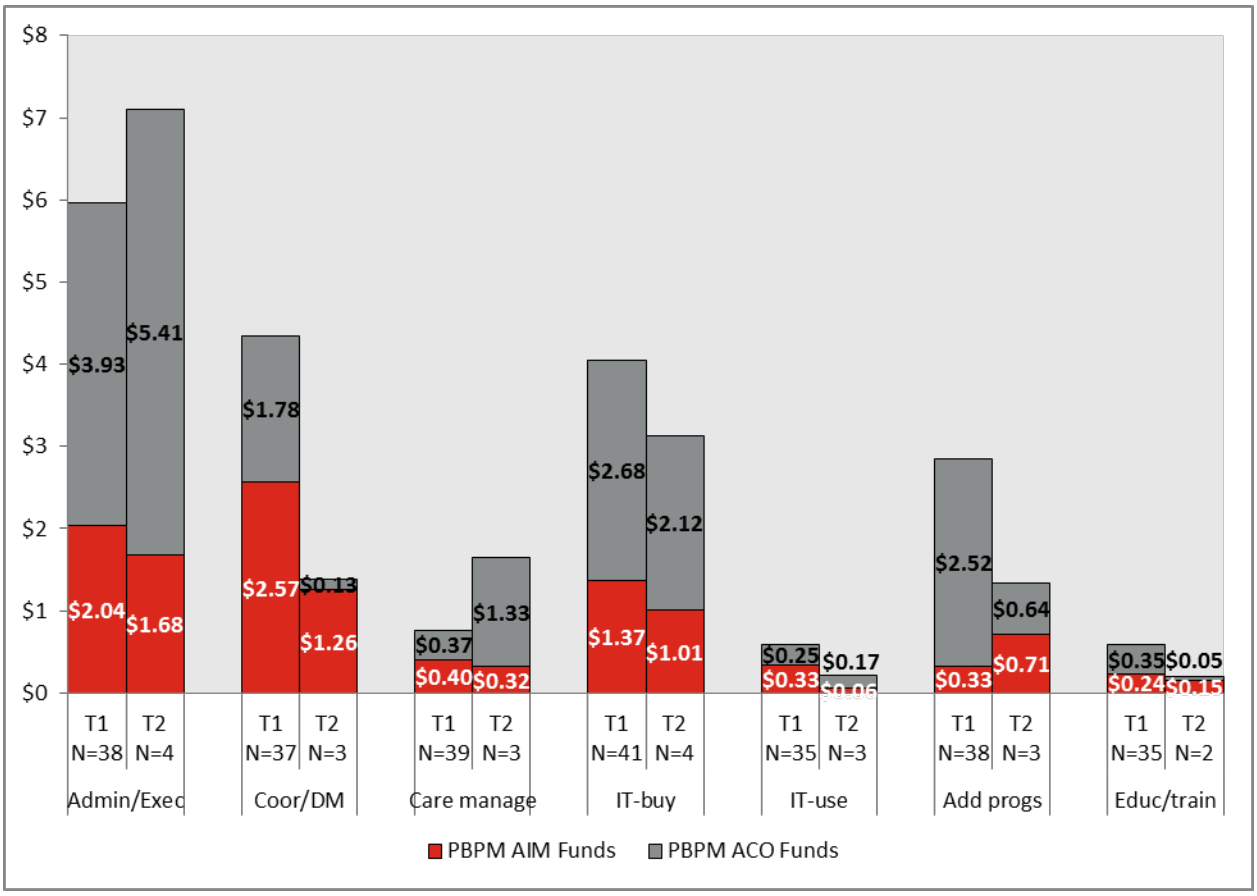


Source: AIM expense reports from Q2 2015 through Q3 2017.
Notes: The actual number of AIM ACOs with non-zero spending within each category varies.

AIM and ACO PBPM spending by Abt categories separately by Test 1 and 2 AIM ACOs is shown in **Exhibit 7-6**. Although total spending for "administrative and executive" activities were the highest overall (see **Exhibit 7-5**), more AIM funds were used for "care coordination and disease management" activities among Test 1 AIM ACOs ($2.57 PBPM compared with $2.04 PBPM for "administrative and executive" activities). In contrast, among Test 1 AIM ACOs, the most ACO internal funds were spent on "administrative and executive" activities ($3.93 PBPM), followed by spending on "IT-buy" ($2.68 PBPM). Among Test 1 AIM ACOs, AIM funds accounted for only 11.6 percent of total spending on "additional programs," though they spent $2.52 PBPM of internal ACO funds on "additional programs," the third highest internal ACO spending category. While AIM funds accounted for 40.2 percent of total spending for "education and training" among Test 1 AIM ACOs, this type of spending only constituted $0.24 PBPM. The analogous spending for Test 2 AIM ACOs was even lower at about $0.15 PBPM.

Test 2 AIM ACOs spent most AIM funds on "administrative and executive" activities ($1.68 PBPM), followed by "care coordination and disease management" activities ($1.26 PBPM). They also spent the most of their own internal ACO funds on "administrative and executive activities" ($5.41 PBPM) following by "IT-buy" ($2.12 PBPM). Very few AIM and internal ACO funds were used for "IT-use" activities and "education and training."

Exhibit 7-6: Test 1 and 2 AIM ACO PBPM Spending by Abt Categories (N = 45 ACOs)

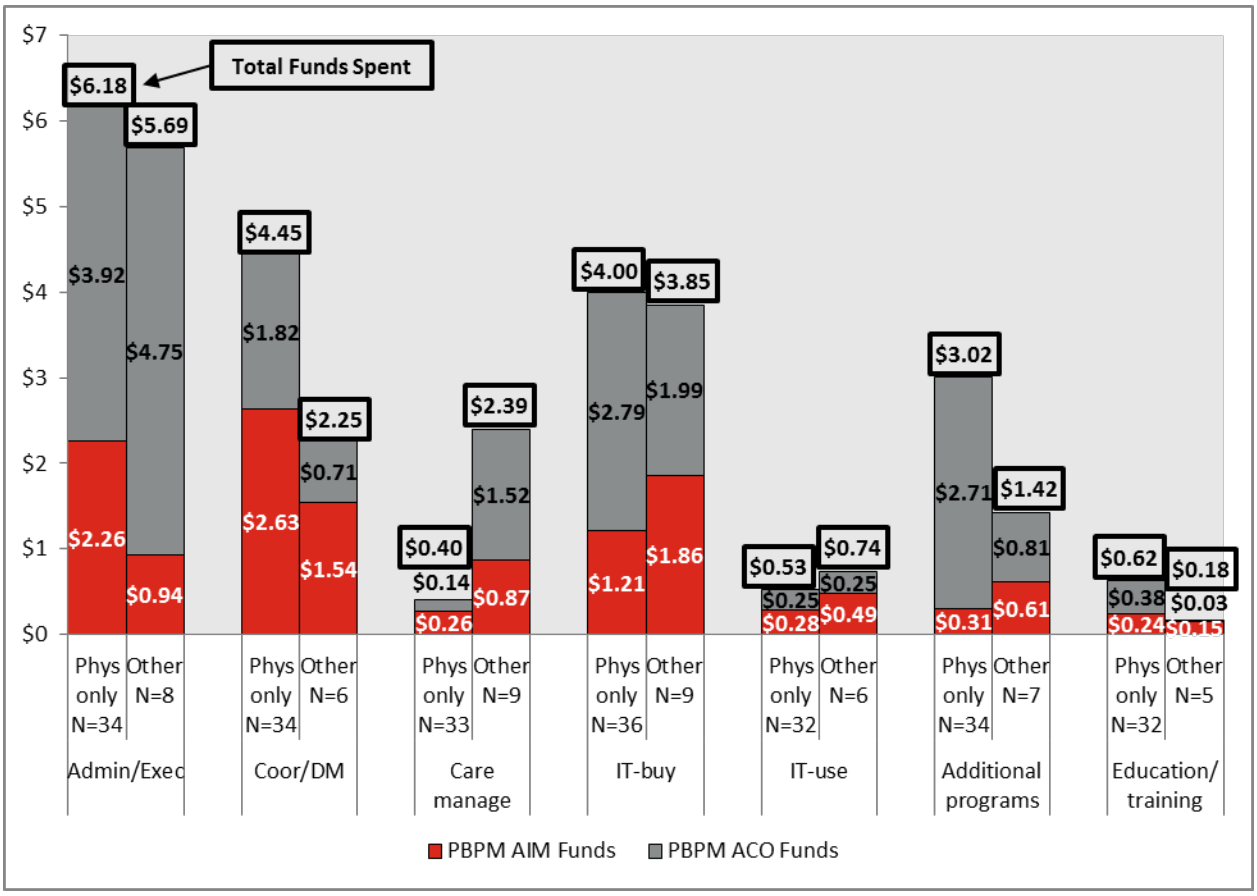


Source: AIM expense reports from Q2 2015 through Q3 2017.
Notes: T1 = Test 1 AIM ACOs; T2 = Test 2 AIM ACOs. The number of ACOs in each category differs because not all ACOs reported any spending in each category. Admin/exec = Administrative/executive; Coor/DM = Care coordination/disease management; Care manage = Care management; Add progs = Additional programs; Educ/train = Education and training.

Average PBPM spending by Abt category stratified by physician-only ACOs versus all others is shown in **Exhibit 7-7**. The physician-only designation is determined by whether the ACO listed only physician practices as providers in the ACO according to the 2016 ACO Provider RIF. Note that ACOs may include both physicians and hospitals as providers, even if the physicians are truly independent practices (and not part of a larger health system). Thus, this designation may not distinguish between independent physician practices and those owned by a hospital or part of a health system.

We found that physician-only ACOs spent more on "care coordination and disease management" activities than non-physician-only ACOs ($4.45 PBPM versus $2.26 PBPM). They spent about the same amount on "administrative and executive" functions ($6.17 PBPM for physician-only versus $5.68 for non-physician only ACOs). However, AIM funds were used more heavily in "administrative and executive" functions for non-physician-only ACOs (36.5 percent for physician-only versus 16.5 percent for non-physician only ACOs). Physician-only ACOs spent about the same on IT (both "IT-buy" and "IT-use") compared with non-physician only ACOs. Physician-only ACOs spent more on additional programs ($3.01 PBPM compared with $1.43 for non-physician-only ACOs) and more on education/training ($0.63 PBPM, compared with $0.17 for non-physician-only ACOs).

Exhibit 7-7: AIM ACO PBPM Spending by Physician-Only Practices and All Others (N = 45 ACOs)



Source: AIM expense reports from Q2 2015 through Q3 2017 and ACO Provider RIF for 2016.
Note: The number of ACOs in each category differs because not all ACOs reported any spending in each category. Admin/exec = Administrative/executive; Coor/DM = Care coordination/disease management; Care manage = Care management; Add progs = Additional programs. Values of Total Funds Spent may vary slightly from text due to rounding.

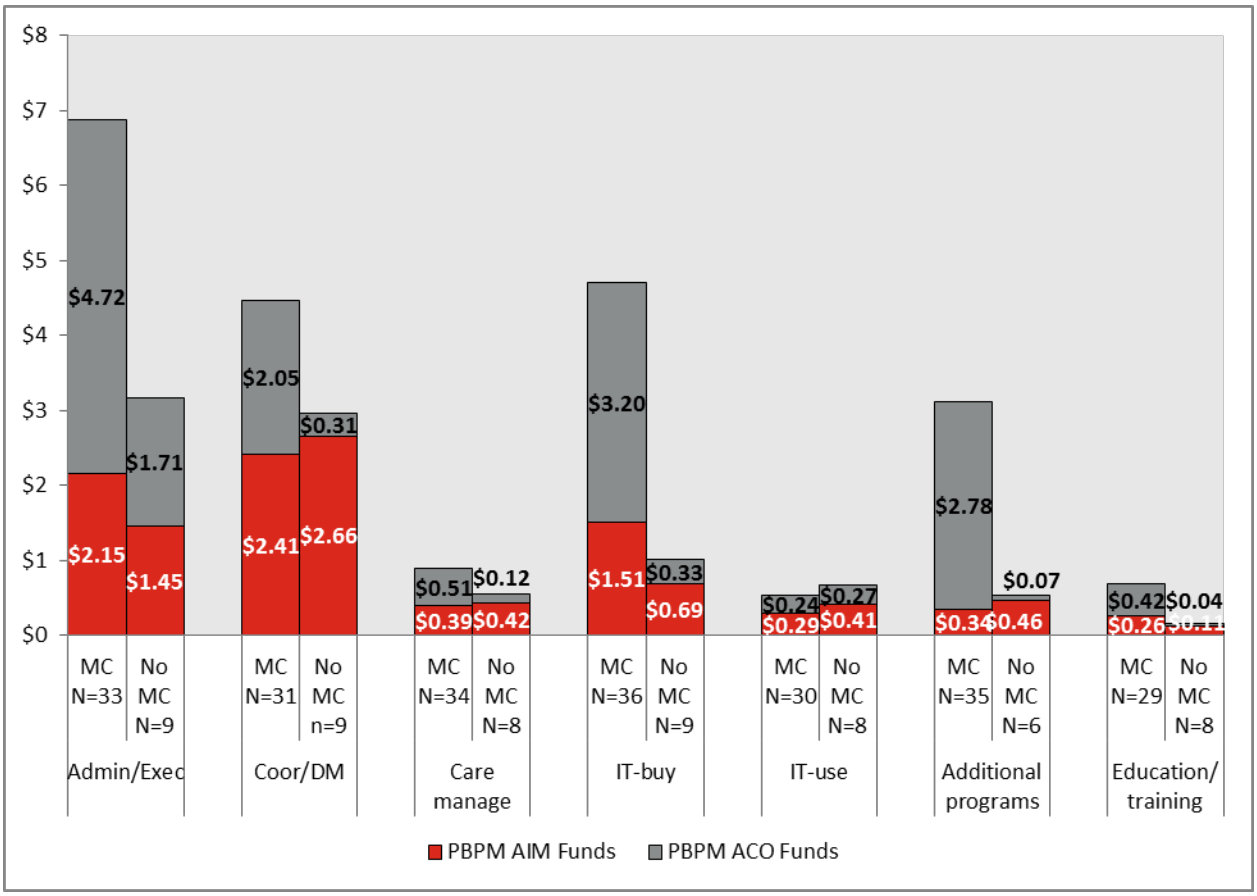
The majority of AIM ACOs (36 of 45) used a management company to some extent for ACO functions. The role of the management company varied depending on the ACO, ranging from light involvement, such as assistance in the application process or legal advising, to heavy involvement in terms of implementing most functions of the ACO. Average per beneficiary per month spending by whether the ACO used a management company is shown in **Exhibit 7-8**.

We found substantially higher spending for ACOs using management companies across almost all categories of spending with the exception of "IT-use." For "administrative and executive" activities, ACOs using a management company spent $6.87 PBPM compared with $3.17 PBPM for ACOs without management companies. Across the board, ACOs without management companies used fewer of their own ACO funds (and more of AIM funds) in each category. For example, ACOs without management companies spent $2.97 PBPM on care coordination and disease management compared to $4.46 for ACOs with management companies, but the share of AIM funds was substantially higher. AIM funds covered 89.6 percent of spending on care management by ACOs without management companies, compared to 54.1 percent for ACOs with management companies.

ACOs with management companies spent $3.12 PBPM on additional programs, and the six ACOs with no management company that had any spending on additional programs spent about $0.53 PBPM. One

explanation may be that ACOs using management companies did not have many programs in place and that management companies encouraged more spending in this area using a substantial portion of internal ACO funds. Alternatively, management companies may affect how ACOs categorize their spending on the expense reports. Similarly, ACOs with management companies spent substantially more on "IT-buy" ($4.71 PBPM compared with $1.01 PBPM for ACOs without management companies, again with a substantial share from ACO internal funds), suggesting that this infrastructure was largely not in place for ACOs using management companies. This explanation is consistent with relatively even spending on "IT-use" for ACOs with and without management companies ($0.53 and $0.67 PBPM, respectively).

Exhibit 7-8: AIM ACO PBPM Spending by Use of Management Company (MC) (N = 45 ACOs)



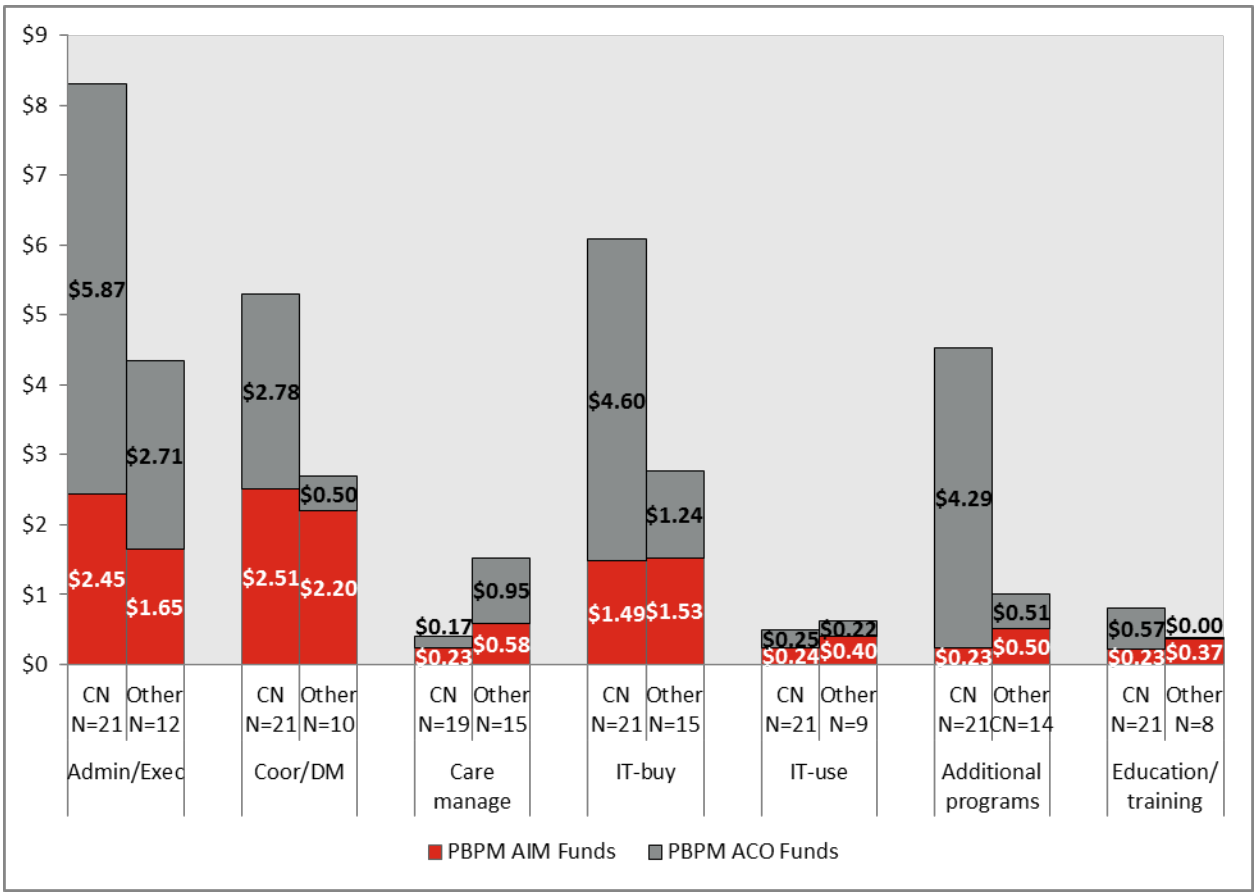
Source: AIM expense reports from Q2 2015 through Q3 2017 and introductory interviews conducted in fall 2016.
Notes: The number of ACOs in each category differs because not all ACOs reported any spending in each category. Admin/exec = Administrative/executive; Coor/DM = Care coordination/disease management; Care manage = Care management; Add progs = Additional programs.

One management company, Caravan Health, is used by 21 AIM ACOs. It is the management company for 14 of the 19 ACOs where the management company has high involvement with ACO functions (see **Exhibit 3-5**). PBPM spending for ACOs using management company services (36 ACOs) stratified by the use of Caravan is shown in **Exhibit 7-9**. We found similar patterns as **Exhibit 7-8** with notably high spending for "administrative and executive" and "IT-buy" activities among Caravan ACOs. These Caravan ACOs spent $8.31 PBPM on "administrative and executive" activities, with $2.45 PBPM (29.4 percent) from AIM funds. Non-Caravan ACOs with management companies spent $4.35 PBPM on administrative and executive functions, with $1.65 (37.8 percent) contributed from AIM funds. Caravan ACOs spent $6.09 PBPM on "IT-buy" compared with $2.77 PBPM among non-Caravan managed ACOs.

Caravan ACOs spent substantially more on "additional programs" compared with non-Caravan managed ACOs ($4.53 PBPM versus $1.01 PBPM, respectively).

With the exception of the "care management" category, internal ACO funding was a larger share of Caravan ACOs' total spending compared to ACOs with other management companies. However, this may be a function of how Caravan ACOs categorize spending in reports or may reflect encouragement by Caravan to develop these areas within the ACO with both AIM and internal ACO funds.

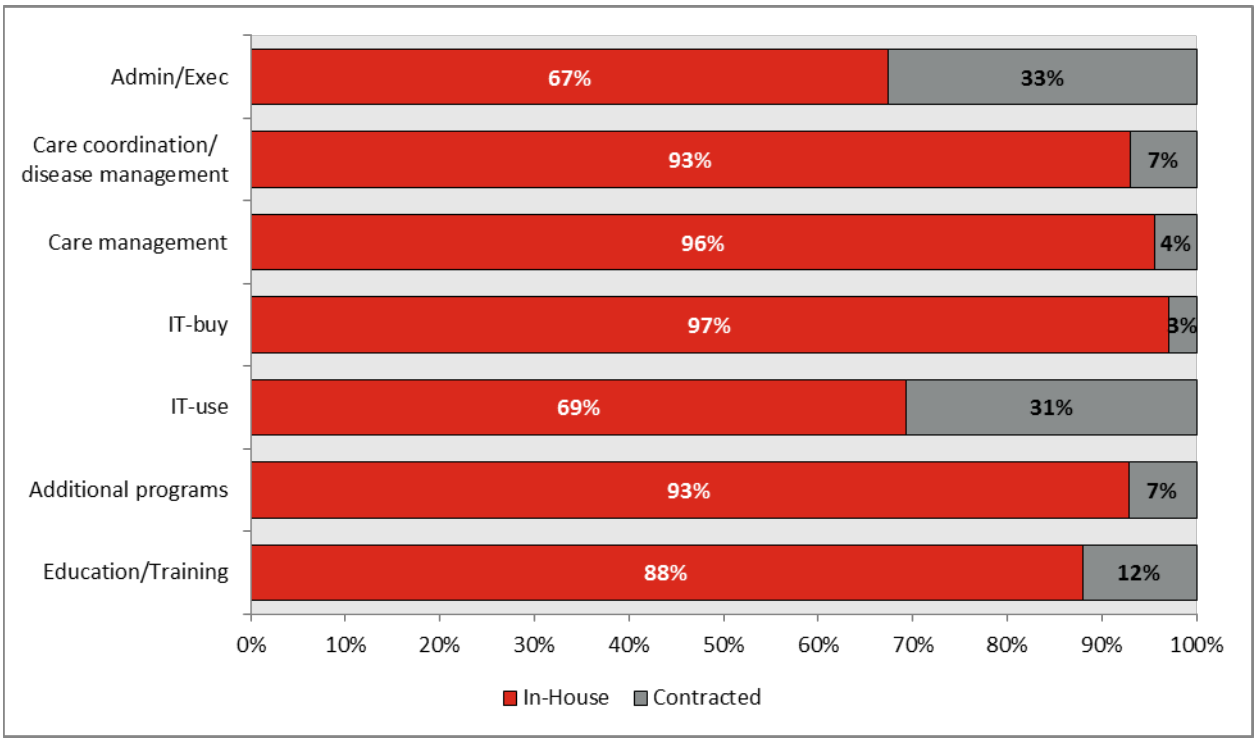
Exhibit 7-9: AIM ACO PBPM Spending for ACOs using Management Companies Stratified by use of Caravan Health (CN) (N = 36 ACOs)



Source: AIM expense reports from Q2 2015 through Q3 2017 and introductory interviews conducted in fall 2016.
Notes: The number of ACOs in each category differs because not all ACOs reported any spending in each category. Admin/exec = Administrative/executive; Coor/DM = Care coordination/disease management; Care manage = Care management; Add progs = Additional programs.

To provide insight on the spending areas where AIM ACO seek outside services, we cross-tabulated the Abt categories with the expense report category of "contracted labor" (**Exhibit 7-10).** The greatest share of contracted labor fell within the administrative and executive category (33 percent of spending in this category is for contracted labor) and "IT-use" (31 percent for contracted labor). Since these Abt categories both consist of more labor-intensive activities unrelated to direct clinical care, relatively higher levels of contracted labor use in these categories are not surprising.

Exhibit 7-10: AIM ACO PBPM Percentage Spending by Contracted or In-House Labor (N = 45 ACOs)



Source: AIM expense reports from Q2 2015 through Q3 2017.

7.4 Discussion and Conclusions

More than 60 percent of the ACOs' overall reported spending on care transformation consisted of ACO internal funds, which was true for both Test 1 and 2 AIM ACOs. However, the amount of internal spending varied widely across AIM ACOs. One AIM ACO did not report spending any internal ACO funds to support AIM activities. Total PBPM spending ranged from $2.26 PBPM to $43.99 PBPM. Future analyses will examine the relationship between spending and impact findings.

The largest category of AIM spending was related to administrative and executive functions. Given that most AIM ACOs are rural and small, this finding may reflect AIM ACOs enhancing the management infrastructure needed to implement ACO organizational or market strategies. In more mature ACOs, we might see lower expenditures in this category, though we did find high spending in this category among the four Test 2 AIM ACOs as well. High spending for administrative and executive functions seemed to be related to the use of management companies. AIM ACOs using management companies reported higher spending across all categories. The relationship between ACOs and management companies continues to be an area of interest. Management companies may be assisting the ACOs in developing the infrastructure needed to function as a successful ACO, but whether the investments are sustainable after AIM funding ceases is an area for further investigation.

Another high area of spending was for IT, particularly for IT purchases ("IT-buy"). Only a small percentage of spending was spent on analyzing the data ("IT-use"). Again, there was higher "IT-buy" spending among AIM ACOs using management companies. Our interviews have confirmed that a key service provided by the Caravan management company was access to software for analyzing claims and electronic health record data to generate performance reports and dashboards.

The low amount of spending for education and training is noteworthy, even with the data limitations. Test 1 AIM ACOs spent about 15 percent of their funds on additional programs, though overall we observed low spending on potentially valuable programs like social workers, exercise programs, behavioral health specialists, nutrition programs, physician education, telemedicine programs, health coaches, and anti-smoking programs. Again, it may be that ACOs are not listing these activities on their expense reports but are spending additional internal funds on them.

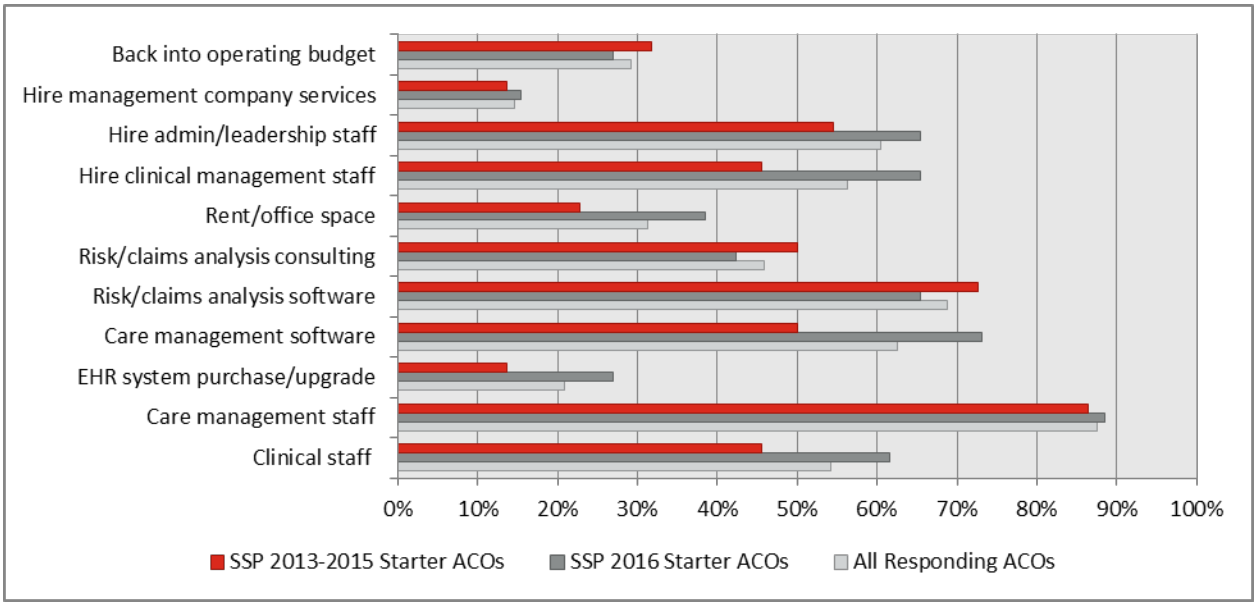
Overall, we found spending patterns that emphasized investing in governance and leadership and labor-intensive care management programs, rather than investments covering the fixed costs of new infrastructure, programs, and training to systematically alter practice patterns and influence spending. Spending on consulting services (shown in **Exhibit 7-10**) was not insignificant, indicating that many AIM ACOs are buying the capabilities to direct and supply analytics to small practices, rather than building them on their own. Although interviews with AIM ACOs have revealed general satisfaction with management company services, whether these services contribute to sustainable changes in practice patterns remains an area for investigation.

7.4.1 Non-AIM SSP ACO Spending

In the fall of 2016, we fielded an electronic survey to non-AIM SSP ACOs. The survey sample frame consisted of 132 non-AIM ACOs (62 ACOs beginning the Shared Savings Program in 2016 and 70 ACOs beginning the Shared Savings Program between 2013 and 2015). Overall, 48 of the 132 non-AIM SSP ACOs (36.3 percent) completed the survey. The survey items summarized below are available in **Appendix 7B**.

Exhibit 7-11 presents the responses to a Shared Savings Program survey question asking the areas in which ACOs incurred expenses to support their Shared Savings Program participation (respondents could select from multiple close-ended options). As shown, the top area indicated by respondents was in hiring or expanding the roles of care management staff. The next highest categories were related to software purchases and hiring administrative management staff.

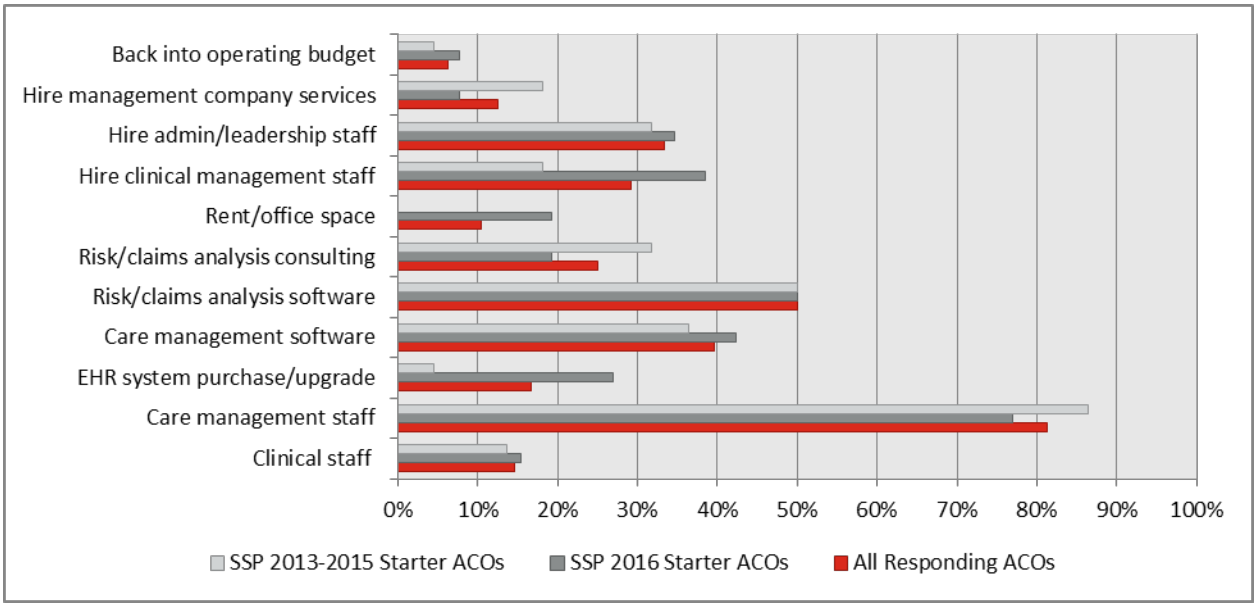
Exhibit 7-11: Expenses Incurred to Support Shared Savings Program Participation by Survey Respondents



Source: Survey item #10 from non-AIM SSP ACO Web survey. N=48 ACOs (22 SSP 2013-2015 Starter ACOs and 26 SSP 2016 Starter ACOs).

The survey also asked non-AIM SSP ACOs what they would spend money on if they had access to up-front funds in the form of pre-paid shared savings. **Exhibit 7-12** summarizes these responses. Over 80 percent of respondents indicated that they would spend the money on care management staff.

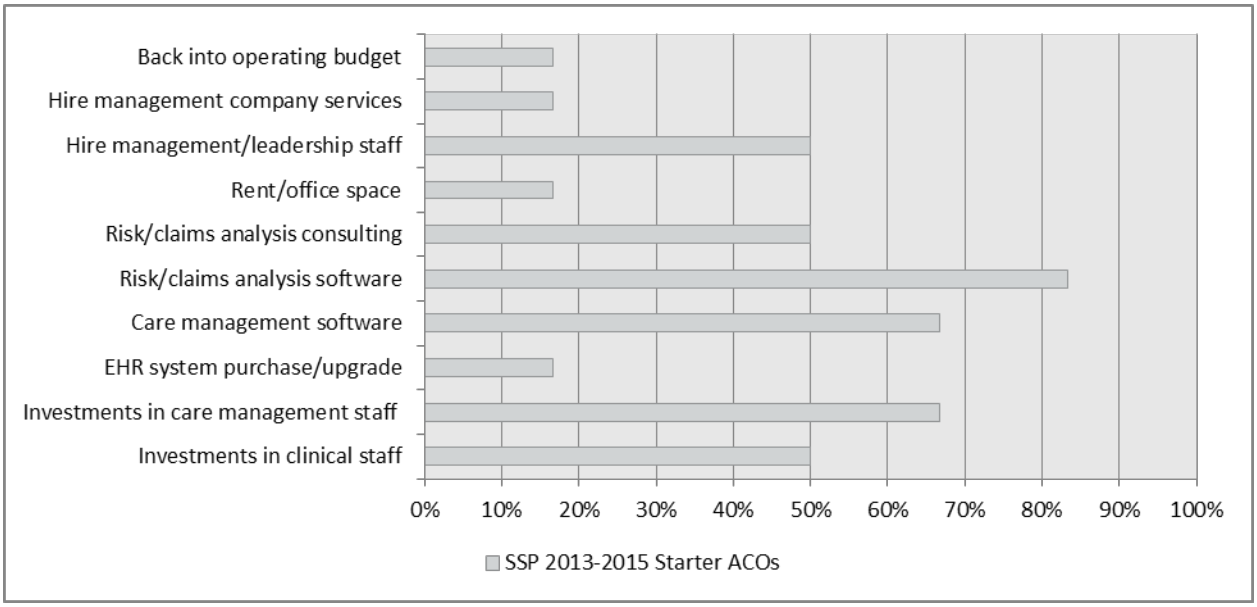
Exhibit 7-12: Spending Areas Reported by Survey Respondents Had They Had Access to Up-front Funds



Source: Survey item #11 from non-AIM SSP ACO Web survey. N=48 ACOs (22 SSP 2013-2015 Starter ACOs and 26 SSP 2016 Starter ACOs).

Finally, non-AIM SSP ACOs that joined the Shared Savings Program prior to 2016 and earned shared savings were asked to indicate how the earned savings was spent (**Exhibit 7-13**). Of the six respondents that met this criterion, most (83.3 percent) indicated that the savings was spent on risk/claims analysis software. Care management software and care management staff were the next largest spending categories.

Exhibit 7-13: Savings Distribution for Survey Respondents with Any Earned Shared Savings Prior to 2016



Source: Survey item #12b from non-AIM SSP ACO Web survey. N= 22 SSP 2013-2015 Starter ACOs.

In contrast, for AIM ACOs, while clinical care and IT purchases were high-spending categories each covering approximately a quarter of total spending (see **Exhibit 7-5**), a higher share was spent on administrative and executive functions (31.2 percent of total spending for Test 1 AIM ACOs and 47.2 percent for Test 2 AIM ACOs). However, for Test 1 AIM ACOs, most AIM funds were spent on "care coordination and disease management," in line with the survey respondents. These findings suggest that administrative costs related to setting up an ACO were higher than anticipated or may have been related to the use of management companies—ACOs not using management companies had substantially lower spending on administrative and executive functions. On the other hand, without the support of the management company, some SSP ACOs may not have been able to form and participate in AIM.

As we explore AIM ACO spending further, we will examine the relationship between AIM spending across the categories, success in earning shared savings, and findings from the impact analyses.

8. Conclusions and Next Steps

In this report, we described the ACOs participating in AIM and estimated impacts of the model based on the first performance year. AIM tests two models: Test 1, intended to encourage ACO formation in low-ACO areas; and Test 2, intended to sustain ACO participation and encourage movement to two-sided financial risk tracks. The majority of AIM ACOs (41 of 47 ACOs that began AIM) were in Test 1. Of the six Test 2 AIM ACOs, two discontinued participation in the model at the end of the first year.

By design, Test 1 AIM ACOs were located in more rural and underserved areas than Test 2 AIM ACOs. Test 1 ACO providers frequently included small hospitals, FQHCs, and RHCs, sometimes located far from each other, even crossing state lines. Test 1 AIM ACOs tended to be affiliated with management companies that played an active role in forming and operating the ACO. AIM payments were used to fund operational aspects of running an ACO, which frequently included the set-up of IT systems and the data analytics needed for care management. AIM payments were also used for hiring care coordinators and the administrative functionality of the ACO. Fewer AIM payments were devoted to care redesign programs and education or training. In terms of impacts on spending and utilization, we found patterns of Test 1 AIM ACOs with lower spending relative to FFS beneficiaries in the ACOs' markets driven by reductions in high-cost categories of utilization such as acute hospitalizations and ED visits and occurred despite some evidence of increases in lower-cost care types such as office-based physician visits. In future analyses, we also intend to study the impacts of AIM for Test 1 AIM ACOs relative to beneficiaries in other similar SSP ACOs.

In contrast, most Test 2 AIM ACOs were located in urban areas and served populations more vulnerable to problems with access to care. Beneficiaries assigned to Test 2 AIM ACOs were more likely to be racial or ethnic minorities, dually eligible for Medicare and Medicaid, and relatively high health care spenders. Test 2 AIM ACOs tended to be small, serving close to the minimum number of assigned beneficiaries required by the Shared Savings Program. We compared Test 2 AIM ACOs to comparable non-AIM SSP ACOs. Most of the resulting differences in health care spending and utilization were statistically insignificant. However, one Test 2 AIM ACO experienced a large reduction in spending compared to non-AIM SSP ACOs and generated large earned shared savings from the financial reconciliation in the same year. We found evidence that Test 2 AIM ACOs performed better on the preventive health domain of ACO quality measures, although they appeared to perform less well compared to non-AIM SSP ACOs on ACO quality measures related to some at-risk populations.

This report represents a preliminary analysis of the features and performance of AIM ACOs as well as their approaches to care transformation. We will continue to investigate whether the patterns noted in the first performance year hold in the second performance year of AIM. Two years of data in the performance period will also allow us to better understand the variability of individual provider participation within each AIM ACO. In particular, we are planning to compare variability in provider participation within the performance period and across baseline and performance periods to assess whether and to what extent AIM changes provider incentives to participate in an ACO. In addition, findings from recent interviews with ACO leadership and clinicians on their experience with AIM will be synthesized into future reports.

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