



Evaluation of the Accountable Care Organization Investment Model

*AIM Implementation and Impacts over Two Performance Years
Appendices*



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Appendix 1A. AIM ACO Characteristics in Second Performance Year

ACO Name	# Practitioners	Percent primary care physicians	Percent non-physician practitioners	Percent specialist physicians	# Facility-based participants (CAH, ETA, FOHC, RHC)	Number of Assigned Beneficiaries	Rurality	Primary Care HPSA	Mental Care HPSA
AIM Test 1 ACOs									
Carolina Medical Home Network ACO	30	70.0%	30.0%	0.0%	77	14,599	59.1%	10.7%	45.5%
Illinois Rural Community Care Organization	187	50.8%	38.0%	11.2%	79	16,813	90.4%	28.5%	96.9%
Reid ACO	155	24.5%	50.3%	25.2%	1	9,744	97.4%	8.1%	97.8%
Akira Health of Los Angeles	55	56.4%	3.6%	40.0%	0	5,871	0.7%	5.7%	35.8%
Texas Rural ACO	82	52.4%	36.6%	11.0%	13	6,285	64.2%	24.9%	61.3%
Access Care Oklahoma	141	25.5%	52.5%	22.0%	3	8,501	65.4%	20.0%	46.0%
Citrus County ACO	34	52.9%	47.1%	0.0%	0	9,308	0.3%	0.0%	0.0%
AmpliPHY of Texas ACO	41	90.2%	7.3%	2.4%	2	5,919	15.0%	13.2%	21.5%
AmpliPHY of Kentucky ACO	30	50.0%	36.7%	13.3%	0	4,002	99.2%	31.4%	100.0%
Winding River ACO	202	37.6%	49.0%	13.4%	12	14,488	88.3%	19.0%	86.8%
Prairie Hills Care Organization	154	31.2%	50.0%	18.8%	15	9,680	100.0%	13.2%	99.9%
Great Plains Care Organization	67	64.2%	32.8%	3.0%	4	10,223	98.9%	16.9%	100.0%
Mountain Prairie ACO	105	52.4%	30.5%	17.1%	15	9,258	97.9%	55.7%	100.0%
Iowa Rural ACO	95	37.9%	48.4%	13.7%	18	10,178	97.5%	14.9%	98.9%
Illinois Rural ACO	139	45.3%	31.7%	23.0%	3	14,250	72.4%	5.4%	73.0%
Indiana Rural ACO II	110	29.1%	58.2%	12.7%	4	5,277	81.7%	0.8%	59.1%
Indiana Rural ACO	120	39.2%	42.5%	18.3%	14	12,614	91.6%	28.2%	28.6%
Michigan Rural ACO	82	43.9%	47.6%	8.5%	43	11,650	97.1%	16.0%	98.6%
Southern Michigan Rural ACO	117	41.0%	37.6%	21.4%	20	8,768	74.1%	23.0%	54.1%
New Hampshire Rural ACO	62	53.2%	22.6%	24.2%	23	11,250	97.2%	4.4%	52.9%

ACO Name	# Practitioners	Percent primary care physicians	Percent non-physician practitioners	Percent specialist physicians	# Facility-based participants (CAH, ETA, FOHC, RHC)	Number of Assigned Beneficiaries	Rurality	Primary Care HPSA	Mental Care HPSA
Ohio River Basin ACO	215	38.6%	42.3%	19.1%	4	13,229	83.0%	7.0%	55.5%
Magnolia-Evergreen ACO	92	51.1%	26.1%	22.8%	17	10,354	77.4%	22.1%	97.6%
North Mississippi Connected Care Alliance	120	43.3%	50.0%	6.7%	0	16,904	99.8%	29.5%	99.7%
Deep South Regional ACO	106	43.4%	44.3%	12.3%	28	8,927	72.2%	23.1%	71.6%
Minnesota Rural ACO	341	33.4%	46.0%	20.5%	7	11,498	56.8%	0.7%	54.3%
Oregon-Indiana ACO	80	41.3%	42.5%	16.3%	15	6,726	94.9%	9.2%	82.0%
Mountain West ACO	109	43.1%	44.0%	12.8%	22	9,182	97.5%	2.3%	94.2%
High Sierras-Northern Plains ACO	90	51.1%	30.0%	18.9%	20	8,289	97.9%	23.8%	49.5%
Aledade Kansas ACO	90	60.0%	36.7%	3.3%	4	12,078	71.1%	3.0%	89.7%
Aledade West Virginia ACO	56	51.8%	41.1%	7.1%	1	7,736	8.0%	3.6%	19.3%
Heartland Physicians ACO	56	48.2%	30.4%	21.4%	3	5,415	36.0%	3.4%	98.2%
Alliance ACO	55	76.4%	23.6%	0.0%	2	11,146	54.3%	5.9%	53.7%
Kentucky Primary Care Alliance Region 2	85	41.2%	55.3%	3.5%	47	8,611	93.4%	17.5%	84.2%
Aledade Mississippi ACO	131	44.3%	55.0%	0.8%	3	17,845	57.7%	30.6%	89.6%
Tar River Health Alliance	74	39.2%	41.9%	18.9%	0	10,510	14.9%	5.2%	86.1%
Affiliated ACO	113	54.0%	33.6%	12.4%	0	4,777	98.3%	8.3%	100.0%
California ACO	93	77.4%	19.4%	3.2%	10	20,959	56.9%	5.3%	79.4%
San Juan ACO	104	45.2%	34.6%	20.2%	6	7,955	100.0%	2.1%	100.0%
Rocky Mountain ACO	29	72.4%	20.7%	6.9%	29	13,642	88.7%	58.9%	99.4%
MissouriHealth+	69	30.4%	23.2%	46.4%	107	12,882	37.6%	24.7%	46.1%
Beacon Rural Health	32	59.4%	31.3%	9.4%	9	6,156	92.8%	5.6%	29.1%

ACO Name	# Practitioners	Percent primary care physicians	Percent non-physician practitioners	Percent specialist physicians	# Facility-based participants (CAH, ETA, FOHC, RHC)	Number of Assigned Beneficiaries	Rurality	Primary Care HPSA	Mental Care HPSA
AIM Test 2 ACOs									
The Premier Healthcare Network	89	56.2%	14.6%	29.2%	0	7,531	0.0%	0.5%	37.3%
Akira Health	38	100.0%	0.0%	0.0%	0	7,167	0.6%	0.2%	0.0%
Sunshine ACO	36	50.0%	47.2%	2.8%	0	4,406	3.6%	1.8%	100.0%
PremierMD ACO	133	51.9%	22.6%	25.6%	0	5,710	0.0%	0.0%	0.0%

Source: ACO Provider RIFs and Medicare claims data for 2017 (AIM 2016 starters) and for 2016 (AIM 2015 starters).

Appendix 1B. Data Sources

Data sources include programmatic data on providers participating in the Shared Savings Program (SSP) and the beneficiaries assigned to them; Medicare enrollment and administrative claims data to identify beneficiary characteristics and determine beneficiary ACO assignment; market-level data to describe the markets within which AIM ACOs are located and define comparison groups; and primary data collection in the form of two rounds of interviews with ACO representatives, ACO physician interviews, a virtual focus group with CMS model leads, and an ACO Web survey. These data sources are described below.

Programmatic Data and Medicare Administrative Data

We used the following AIM and SSP programmatic data:

ACO Provider Research Identifiable File (RIF): CMS constructed ACO research files that contain lists of entities participating in the Shared Savings Program by tax identification number (TIN) (practice-level identifier), national provider identifier (NPI) (individual practitioner-level identifier), and CMS certification number (CCN) (facility providers). These data were based upon the Medicare Provider Enrollment, Chain, and Ownership System (PECOS) and ACO participation lists. Provider RIF (ACO participant identifier) Files for 2013 through 2017 were available at the time of this report.

Master Data Management (MDM) Beneficiary Extract (Chronic Conditions Warehouse [CCW] Virtual Research Data Center [VRDC]): This data source contains the programmatically assigned ACO beneficiaries. These data are updated frequently and contain both preliminary prospective assignment as well as final retrospective assignment for the AIM ACOs. We used the MDM Beneficiary Extract in determining beneficiary assignment (see **Appendix 1C** for discussion of the assignment methodology). In this report, we used data from MDD_BENE_EXTRACT_LINKED_180920 accessed on November 20, 2018.

Benchmark files: This data source, provided by the financial reconciliation contractor, contains the programmatically assigned ACO beneficiaries needed to construct the three-year baseline for financial reconciliation.¹ We used these files to conduct beneficiary assignment during the evaluation's baseline years.

National eligible lists: This data source, provided by the financial reconciliation contractor, contains the list of beneficiaries nationwide who are eligible for assignment. This list was used to refine our comparison group of assignment-eligible beneficiaries residing in each AIM ACO's market.

Shared Savings Program ACO Public Use Files (SSP PUFs): These publicly available data sets contain ACO financial results as well as assigned beneficiary characteristics. We used the SSP PUFs to obtain performance on earned shared savings, funds received, and recoupment. We used the 2015, 2016 and 2017 SSP PUFs.

Expense Reports: AIM ACOs were required to submit quarterly expense reports detailing how AIM payments were spent. We analyzed expense reports for each AIM quarter through the end of 2017. We discuss these data in more detail in **Appendix 1E**.

We used Medicare claims and enrollment data from the CCW VRDC to obtain beneficiary characteristics:

Master Beneficiary Summary File ([MBSF] CCW VRDC): This beneficiary summary file contains beneficiary characteristics such as demographic information, Medicaid dual eligibility status, and

¹ <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/Downloads/Shared-Savings-Losses-Assignment-Spec-V4.pdf>

disability status. Importantly, we used these data to determine beneficiaries' residence between 2013 and 2017 to define FFS comparison groups within ACOs' markets.

Medicare Research Identifiable Files ([RIFs] CCW VRDC): We used Medicare claims data for 2013 through 2017 to assign beneficiaries to ACOs and to identify FFS beneficiaries in the ACOs' markets. We used 100 percent Carrier (Part B) and outpatient claims. Data were pulled in September 2017 and November 2018.

Hierarchical Condition Codes (HCC) Risk Scores (CCW VRDC): These files provide the HCC flags (a set of 70 condition flags) and risk scores for all Medicare beneficiaries that are used by Medicare to risk adjust beneficiary payments to Medicare Advantage plans. The HCC file for a particular year provides condition flags and risk scores based on diagnoses from the prior year. At the time of this report, the most recent file available on the CCW was for 2015 (based on 2014 conditions). We used files from 2013 to 2015.

Chronic Conditions File (CCW VRDC): The CCW maintains a data set of indicators for whether Medicare beneficiaries had one of 27 chronic conditions. We used the indicators for END (i.e., within a given year) to compile the history of chronic conditions for each beneficiary. We used data from 2013 to 2017.

Cost and Use File (CCW VRDC): The CCW maintains yearly cost and utilization variables based on administrative claims data. The variables were used to calculate many of the claims-based performance measures (see **Chapter 2.2**). Data were available through 2017.

Lastly, CMS provided the following beneficiary-level data:

Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey data: We received ACO CAHPS responses with linkable beneficiary IDs to ACO-assigned beneficiaries from 2013 to 2017. We also received beneficiary-level responses to CAHPS surveys from the PQRS (Physician Quality Reporting System) from 2013 to 2016 and MIPS (Merit-based Incentive Payment System) in 2017. These data were used to construct and analyze beneficiary-level measures related to patient/caregiver experience.

Market-level Data

Publicly available market-level data were used to characterize ACOs' geographic locations:

- *RUCA Codes:* RUCA codes are ZIP-level codes used to measure the rurality of the market served by AIM ACOs. Data and information on RUCA code development are available from the University of North Dakota's Center for Rural Health.² The RUCA codes were based on 2010 Census work-commuting data, 2012 Census Bureau revised urban area definition based on 2010 Census data, and 2013 ZIP Codes. RUCA designations for older ZIP Codes were obtained from the University of Washington's Rural Health Research Center. These data are based on the 2000 Census and the 2004 ZIP Code information. To define ACOs' rurality, we mapped the RUCA codes at the ZIP Code level to the residence of AIM ACOs' assigned beneficiaries and determined the percentage of assigned beneficiaries residing in a location with a RUCA code equal to or greater than 4 on a scale of 1 to 10, with 10 indicating most rural.³ For some analyses, indicated in the report, we use a RUCA code equal to or greater than 6 to distinguish more rural areas.

² <https://ruralhealth.und.edu/ruca> Last accessed on July 5, 2017

³ Specifically a RUCA score of four indicates an area that is a "Micropolitan area core: primary flow within an Urban Cluster of 10,000 to 49,999."

- *Health Professional Shortage Areas (HPSA)*: HPSAs refer to geographic areas that lack sufficient health care providers to meet the population’s needs. An area that receives a HPSA designation from the Health Resources and Services Administration (HRSA) receives additional resources to improve access to primary, mental, or dental care.⁴ HPSA designations are available at the ZIP Code level for every year between 2013 and 2017.⁵ We mapped them to AIM markets to obtain the percentage of AIM ACOs’ assigned beneficiaries that were located in a HPSA-designated area for each corresponding year.

Primary Data Collection

This report draws from several types of primary data collection (see **Exhibit 1B-1**):

AIM ACO interviews: We conducted two rounds of telephone interviews with representatives from 45 AIM ACOs. The first round covered topics related to AIM ACOs’ reasons and goals for participating, how they have used AIM funds, and their structure and activities as a result of participating in AIM. The second round of interviews revisited topics from the first round and explored interviewees’ reflections on their participation in AIM as well as AIM’s effect on their decision to continue participating in SSP and assuming two-sided financial risk. The first round telephone interviews were conducted between October and December 2016. The second round of telephone interviews was conducted in June 2017 with representatives from the two AIM ACOs that began participation in 2015, and in November to December 2017 with representative from the 43 AIM ACOs that began participation in 2016. Interview guides are provided in **Appendix 3A**.

AIM physician interviews: Between May and June 2017, we interviewed a convenience sample of 21 physicians participating in eight AIM ACOs. Using a semi-structured discussion guide, we collected information about (1) practitioners’ overall perceptions of their participation in AIM, (2) practitioners’ involvement in the allocation of AIM funds, (3) activities the ACO supports, and (4) the resources they provide to practitioners.

CMMI model leads interview: We conducted a 90-minute interview with the three CMMI staff members who had been involved with implementing AIM and, prior to AIM, the AP ACO Model in August 2018. We gathered information about their experiences working directly with the models. The semi-structured discussion guide focused on (1) the ease and/or difficulty in implementing each model; (2) role of the model leads in assisting ACOs with the implementation process; (3) the importance of management companies in helping ACOs achieve shared savings; (4) and challenges and lessons learned from working with ACOs.

ACO Web survey: The AIM ACO Web survey gathered information on AIM ACOs’ sustainability of AIM-funded activities since the completion of AIM funds, overall perceptions of AIM, and continued participation and risk-taking in the Shared Savings Program. For comparison, non-AIM SSP ACOs were also surveyed on their perceptions of the Shared Savings Program, continued participation, and increased risk taking. In fall of 2018, we surveyed 45 AIM ACOs and 101 non-AIM SSP ACOs. **Appendix 3C** provides additional information on responses as well as the sample instrument. We also conducted an earlier ACO Web survey for only non-AIM SSP ACOs in 2016 to enable comparison with AIM ACOs along key dimensions such as organizational structure, care management activities, IT use, and quality

⁴ <https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/HPSAfactsht.pdf>

⁵ <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HPSAPSAPhysicianBonuses/index.html?redirect=/hpsapsaphysicianbonuses/>

measurement. Findings from this survey were discussed in the AIM Evaluation Performance Year 1 report.

Exhibit 1B-1. Timing of AIM Evaluation Data Collections

	2016 April- June	2016 July- December	2017 January- June	2017 July- December	2018 January- June	2018 July- December
Telephone Interviews						
ACO leadership						
Practitioners						
AIM model team						
Web Surveys						
ACO leadership						

Appendix 1C. Beneficiary Assignment

We assigned beneficiaries to AIM ACOs using the same beneficiary assignment algorithms that are used by CMS through its financial reconciliation contractor to calculate shared savings. In this appendix chapter, we describe the assignment methodologies, report our success in replicating the algorithm, and describe how we obtain the final list of ACO beneficiaries used for this evaluation.

SSP Beneficiary Assignment Algorithm

To be assignable to an ACO according to the SSP assignment algorithm, beneficiaries must meet the following criteria during the year of assignment:

- At least 1 month of Part A and Part B enrollment and no months of only Part A or only Part B enrollment;
- No months of Medicare Advantage (private payer) health plan enrollment;
- Not assigned to any other Medicare shared savings initiative; and
- Residence in the U.S. or U.S. territories and possessions based on the most recent available data regarding beneficiary residence at the end of the assignment window.

Between 2012 and 2015, beneficiaries who received at least one primary care service from a physician who is deemed an ACO professional were assigned to the ACO based on a two-step process:⁶

- **Step 1:** The first step assigns a beneficiary to an ACO if the beneficiary received at least one primary care service from a primary care physician participating in an ACO. Primary care physicians are defined as those with the following specialties: internal medicine, general practice, family practice, or geriatric medicine. Primary care services, as measured by allowed charges associated with a set of Healthcare Common Procedure Coding System codes and revenue center codes,⁷ with primary care physicians are aggregated to all TINs or CCNs associated with each ACO.⁸ The aggregate allowed charges from primary care physicians in an ACO are then compared with a beneficiary's primary care services from primary care physicians under each non-ACO TIN/CCN to determine whether the beneficiary obtained a plurality of primary care from ACO providers. If so, the beneficiary is assigned to the ACO.
- **Step 2:** Those beneficiaries who did not receive a primary care service from a primary care physician inside or outside of the ACO are assigned to an ACO as long as the plurality of primary care services (measured by associated allowed charges) is from qualifying specialist physicians (including non-primary care physicians, nurse practitioners, clinical nurse specialists, and physician assistants) under TINs participating in an ACO.⁹

⁶ CMS, "Medicare Shared Savings Program: Shared Savings and Losses and Assignment Methodology Specification, Applicable beginning Performance Year 2015," Version 3, December 2014.

⁷ See Table 1 of the "Medicare Shared Savings Program: Shared Savings and Losses and Assignment Methodology Specification, Applicable beginning Performance Year 2015," Version 3, December 2014.

⁸ Primary care received from ACO providers that are RHCs, FQHCs, method II CAHs, and Electing Teaching Amendment (ETA) hospitals is also used in assignment. We identified these entities using CCNs.

⁹ For the list of physician specialties, see Table 3 of the "Medicare Shared Savings Program: Shared Savings and Losses and Assignment Methodology Specification, Applicable beginning Performance Year 2015," Version 3, December 2014.

Effective on January 1, 2016, updated assignment rules were applied.¹⁰ Changes to the assignment methodology included:

- Step 1 expanded from considering primary care services from only primary care *physicians* to primary care *practitioners* (nurse practitioners, clinical nurse specialists, and physician assistants).
- Primary care physician specialties were expanded to include the pediatric specialty.
- Certain specialty types whose services are not likely to be indicative of primary care services were removed from Step 2 to place a greater emphasis on primary care.
- The definition of primary care services was expanded to include transitional care management services following a beneficiary’s discharge from a hospital or a skilled nursing facility (SNF) and chronic care management services for beneficiaries with two or more chronic conditions. Specifically, these services include CPT codes: 99490, 99495, 99496, and a new code for outpatient hospital claims, G0463.

Effective January 1, 2017, the definition of primary care services excludes services delivered to beneficiaries in SNFs (CPT codes 99304 to 99318) for claims that contain the place of service (POS) 31 modifier.¹¹ We assessed how this change affected assignment to ACOs. We found that approximately 5 percent of beneficiaries who were assigned using the previous methodology were no longer assigned. These beneficiaries tended to be more costly.

For ACOs participating in Track 1 (no down-side risk), the Shared Savings Program applies a **retrospective** assignment methodology, meaning that attribution of beneficiaries to ACOs is based on the provision of care during the performance year and final assignment is not conducted until after the year has concluded (though ACOs receive quarterly updates with beneficiaries that will likely be assigned to them). In contrast, for ACOs participating in Track 3 or Track 1+ (risk and reward), the Shared Savings Program applies a **prospective** assignment methodology in which attribution to the ACO is determined by historical provision of care (specifically, the 12 months ending three months prior to the start of the participation year). Thus, these ACOs know with certainty which beneficiaries will be attributed to them throughout the participation year. All AIM ACOs participated in Track 1 in PY1. In PY2, one AIM ACO (Sunshine ACO), transitioned to Track 3.

Applying the Assignment Algorithm

We had access to the MDM Beneficiary Extract and Benchmark files to identify the officially assigned beneficiaries in each year from 2013 to 2017 (see **Appendix 1B** for a description of these files). For AIM Test 1 ACOs, the MDM Beneficiary Extract enabled us to identify assigned beneficiaries in each of the performance years. The Benchmark files allowed us to identify the beneficiaries who would have been assigned to an ACO in 2013 through 2015 based on the providers participating in the ACO in 2016 and

¹⁰ CMS (79 FR 67802), “Medicare Program; Medicare Shared Savings Program: Accountable Care Organizations,” June 9, 2015.

¹¹ CMS (42 CFR Parts 405, 4010, 411, et al., “Medicare Program: Revisions to Payment Policies Under the Physician Fee Schedule and Other Revisions to Part B for CY 2016,” November 16, 2015. Also see <https://www.naacos.com/news/Criticalchangesin2016Medicarephysicianfeeschedule392016.htm> accessed May 24, 2016

separately for the providers participating in the ACO in 2017.¹² In other words, we constructed performance year-specific baselines.¹³

To evaluate AIM Test 2 ACOs, which existed in the Shared Savings Program prior to joining AIM, we applied the assignment algorithm to each performance year since starting the Shared Savings Program to create two baseline years preceding their first performance year in AIM.¹⁴ For PY1 analyses provided in the AIM Evaluation Performance Year 1 Report (2018) we used actual assignment rules in place during each year. That is, for a Test 2 ACO that began AIM in 2016, we used 2016 assignment rules in 2016 and prior assignment rules in the prior years. However, in this report, for PY2, we applied 2017 assignment rules to each year (including the baseline) because we found from the updated assignment rules that removing beneficiaries who received care in a SNF setting from assignment changed the composition of beneficiaries even though only about 5 percent of beneficiaries were affected. We did not want the performance year beneficiaries to be artificially *less* costly beneficiaries than those in the baseline period due solely to the change in assignment rules.

We were able to closely match the officially assigned beneficiaries after replicating assignment. Overall, we identified approximately 98 percent of officially assigned beneficiaries across AIM ACOs (see **Exhibit 1C-1**). The small percentage of officially assigned beneficiaries who were not assigned based on evaluation data were because the beneficiary did not meet eligibility criteria; was assigned to another ACO; or was not assigned to any ACO. These discrepancies in assignment are likely from differences in the timing of the data sources used—Abt assignment was conducted with more claims run-out time than available to the financial reconciliation contractor. Our application of the algorithm did yield a slightly greater number of assigned beneficiaries than the official lists. Across AIM ACOs, Abt assigned, on average, 4 to 5 percent more beneficiaries than the number of Abt beneficiaries matching the official list of beneficiaries (last column of **Exhibit 1C-1**).

¹² Five AIM Test 1 ACOs began SSP in 2015 (and AIM in 2016). We still hypothetically assigned beneficiaries to performance year providers using claims data in 2015.

¹³ That is, for PY1, we assigned beneficiaries to ACOs in 2016 and hypothetically assigned using ACO 2016 providers in 2013, 2014, and 2015. For PY2, we assigned beneficiaries to an ACO in 2017 and hypothetically assigned using ACO 2017 providers in 2013, 2014, and 2015.

¹⁴ The exception was the Physicians Collaborative Trust of Mississippi Gulf Coast, which started the Shared Savings Program in 2012. For this ACO, we applied the assignment algorithm starting in 2013.

Exhibit 1C-1. Comparing Official and Abt-Assigned Beneficiary Counts across AIM ACOs

Year	# of AIM ACOs [a]	Total # Official Beneficiaries	# Abt Beneficiaries	% Overlap	# Abt Additional	% Abt Additional
PY 1						
2013	45	405,576	398,535	98.3%	18,758	4.7%
2014	47	438,542	429,914	98.0%	19,221	4.5%
2015	47	445,589	435,412	97.7%	20,447	4.7%
2016	45	419,237	412,750	98.4%	16,890	4.1%
PY 2						
2013	45	455,029	437,650	96.2%	15,585	3.6%
2014	47	492,367	470,928	95.6%	16,623	3.5%
2015	47	507,839	480,690	94.7%	17,026	3.5%
2017	45	470,129	449,428	95.6%	24,275	5.4%

Source: For Performance Year 1 (PY1): MDD_BENE_EXTRACT_LINKED_170911, Benchmark files from 2013 to 2015 received from CMS in May 2017. For Performance Year 2 (PY2): MDD_BENE_EXTRACT_LINKED_180920 accessed on November 20, 2018, updated Benchmark files from 2013 to 2015 received from CMS in August.

[a] Two AIM Test 2 ACOs were not present in 2016 because they existed the Shared Savings Program at the end of 2015. Two additional AIM Test 2 ACOs were not present in 2013 because they began the Shared Savings Program in 2014. For Test 2 AIM ACOs, actual SSP assignment was used to define the AIM baseline. In contrast, for Test 1 AIM ACOs, we compared Abt's hypothetical assignment to the Benchmark files for 2013 through 2015 (the baseline years for Test 1 AIM ACOs).

The Abt beneficiaries overlapping with the official lists were designated as ACO beneficiaries—or beneficiaries exposed to the intervention of being in an AIM ACO—for the purposes of this evaluation. Thus, both Abt additional beneficiaries and officially assigned beneficiaries not assigned by Abt were excluded from the ACO group. If they met the comparison group criteria (see **Chapter 2**), Abt additional beneficiaries may have appeared in the market comparison group; however, officially assigned beneficiaries that were not identified by Abt were excluded from both ACO and comparison groups.

Appendix 1D. AIM ACO AIM Funds and Financial Results

ACO Name	Total AIM Funds Received	AIM Funds Expensed	Earned Shared Savings	Recouped AIM Funds	AIM Funds Outstanding
AIM Test 1 ACOs					
Carolina Medical Home Network ACO	\$2,530,000	\$2,211,656	\$0	\$0	\$2,530,000
Illinois Rural Community Care Organization	\$2,530,000	\$1,577,938	\$0	\$0	\$2,530,000
Reid ACO	\$2,080,708	\$2,080,353	\$0	\$0	\$2,080,708
Akira Health of Los Angeles	\$1,459,912	\$972,095	\$0	\$0	\$1,459,912
Texas Rural ACO	\$1,773,220	\$1,390,674	\$0	\$0	\$1,773,220
Access Care Oklahoma	\$2,229,976	\$1,148,523	\$0	\$0	\$2,229,976
Citrus County ACO	\$2,220,244	\$1,313,959	\$9,393,085	\$2,220,244	\$0
AmpliPHY of Texas ACO	\$1,886,752	\$1,382,672	\$0	\$0	\$1,886,752
AmpliPHY of Kentucky ACO	\$1,966,720	\$530,450	\$1,110,552	\$1,110,552	\$856,168
Winding River ACO	\$2,078,824	\$2,075,611	\$0	\$0	\$2,078,824
Prairie Hills Care Organization	\$2,462,236	\$2,294,811	\$4,905,951	\$2,462,236	\$0
Great Plains Care Organization	\$2,054,932	\$1,442,417	\$1,992,047	\$1,992,047	\$62,885
Mountain Prairie ACO	\$2,522,800	\$2,374,493	\$4,568,040	\$2,522,800	\$0
Iowa Rural ACO	\$2,530,000	\$1,832,559	\$2,416,099	\$2,130,000	\$400,000
Illinois Rural ACO	\$2,530,000	\$1,607,218	\$0	\$0	\$2,530,000
Indiana Rural ACO II	\$1,601,716	\$1,601,723	\$3,012,667	\$1,601,716	\$0
Indiana Rural ACO	\$2,530,000	\$1,624,975	\$0	\$0	\$2,530,000
Michigan Rural ACO	\$2,530,000	\$1,621,150	\$2,785,961	\$2,530,000	\$0
Southern Michigan Rural ACO	\$2,439,124	\$1,635,954	\$2,278,564	\$2,278,564	\$160,560
New Hampshire Rural ACO	\$2,530,000	\$1,732,378	\$2,344,335	\$2,344,335	\$185,665
Ohio River Basin ACO	\$2,530,000	\$1,877,573	\$0	\$0	\$2,530,000
Magnolia-Evergreen ACO	\$2,530,000	\$1,672,518	\$4,920,692	\$2,130,000	\$400,000
North Mississippi Connected Care Alliance	\$2,530,000	\$2,530,037	\$0	\$0	\$2,530,000
Deep South Regional ACO	\$2,324,608	\$1,905,030	\$0	\$0	\$2,324,608
Minnesota Rural ACO	\$1,898,116	\$1,459,577	\$0	\$0	\$1,898,116
Oregon-Indiana ACO	\$2,135,476	\$1,341,079	\$0	\$0	\$2,135,476
Mountain West ACO	\$2,519,920	\$2,008,077	\$0	\$0	\$2,519,920
High Sierras-Northern Plains ACO	\$2,229,940	\$1,892,599	\$0	\$0	\$2,229,940
Aledade Kansas ACO	\$2,093,344	\$1,509,659	\$0	\$0	\$2,093,344
Aledade West Virginia ACO	\$2,115,328	\$1,414,766	\$4,517,326	\$2,115,328	\$0
Heartland Physicians ACO	\$2,006,332	\$1,226,512	\$1,131,813	\$1,131,813	\$874,519
Alliance ACO	\$2,263,228	\$1,468,189	\$3,204,279	\$2,263,228	\$0

ACO Name	Total AIM Funds Received	AIM Funds Expensed	Earned Shared Savings	Recouped AIM Funds	AIM Funds Outstanding
Kentucky Primary Care Alliance Region 2	\$1,924,516	\$1,586,402	\$955,460	\$955,460	\$969,056
Aledade Mississippi ACO	\$2,530,000	\$1,779,519	\$4,549,453	\$2,530,000	\$0
Tar River Health Alliance	\$2,334,508	\$751,124	\$0	\$0	\$2,334,508
Affiliated ACO	\$1,647,964	\$1,228,064	\$0	\$0	\$1,647,964
California ACO	\$2,530,000	\$1,485,663	\$0	\$0	\$2,530,000
San Juan ACO	\$1,966,804	\$981,225	\$0	\$0	\$1,966,804
Rocky Mountain ACO	\$2,530,000	\$1,378,368	\$0	\$0	\$2,530,000
MissouriHealth+	\$2,227,192	\$1,065,024	\$2,856,284	\$2,227,192	\$0
Beacon Rural Health	\$1,745,716	\$1,725,503	\$0	\$0	\$1,745,716
AIM Test 2 ACOs					
The Premier Healthcare Network	\$1,094,544	\$1,217,243	\$9,677,828	\$1,094,544	\$0
Akira Health	\$1,490,004	\$1,391,447	\$0	\$0	\$1,490,004
Sunshine ACO	\$903,888	\$347,945	\$9,386,665	\$903,888	\$0
PremierMD ACO	\$1,026,936	\$496,955	\$2,626,062	\$842,946	\$183,990

Note: “Total AIM funds received,” “earned shared savings,” “recouped AIM funds,” and “AIM funds outstanding” were retrieved from the 2015-2017 SSP PUFs. “AIM funds expensed” were retrieved from AIM quarterly expense reports from 2015-2017. For a few ACOs the amount of “AIM funds expensed” is slightly greater than “total AIM funds received.” This is likely due to differences in the timing of the two data sources. We will continue to monitor this through 2018 (since most AIM ACOs have through the end of 2018 to use AIM funds).

Appendix 1E. Analysis of AIM Expense Reports

As a requirement of AIM participation, ACOs documented 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 per 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 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.

Data and Methods

We examined all available final approved expense reports from Q2 2015 to Q4 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 management*: 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.”
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. *Health IT/systems*: This subcategory includes technology purchases such as electronic health record interfaces, spending on licenses for software, data storage, and data sharing costs.
 - b. *Data analytics*: This subcategory includes ongoing data analysis with IT for expense line items such as “claims analysts” and “data analysts.”
4. *Other*: This category captured any programs or investments made by the ACO to change the services and processes delivered at the point of care systemically for patients as well as education and training. Additional programs offered included exercise programs, anti-smoking programs, telehealth, lean analysis, practice transformation specialists, and social workers, among others.

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.

The AIM Evaluation Report for Performance Year 1 (2018) included detailed analyses of AIM reported expenses. In this report, we provide some statistics on these expenses to support information collected through interviews with AIM ACOs on how ACOs spent AIM funds (see **Chapter 4**).

Appendix 1F. AIM Evaluation Performance Measures

Measure	Description
Medicare Payments (per beneficiary per month)	
Total payment	Total Medicare Payments (Parts A and B, includes Per Diem Payment for Acute & OIP)
Acute inpatient	<p>Acute Medicare Payment + Acute Per Diem Payment</p> <p>Acute Medicare Payment is the sum of the Medicare claim payment amounts (claim payment amount from each claim) in the acute inpatient setting for a given year.</p> <p>Acute Per Diem Payment is the sum of the entire pass through per diem payment amounts (Claim pass through per diem amount from each claim) in the acute inpatient setting for a given year. Medicare payments are designed to include certain "pass-through" expenses such as capital-related costs, direct medical education costs, kidney acquisition costs for hospitals that are renal transplant centers, and bad debts. This variable is the sum of all the daily payments for pass-through expenses. It is not included in the Medicare Payment amount (Acute Medicare Payment). To determine the total Medicare payments for acute hospitalizations for the beneficiary, this field should be added to the total Medicare payment amount for acute hospitalizations.</p>
Physician services	<p>Anesthesia + E&M + imaging + procedures + physician visits (E&M in office setting) + tests + part B drugs</p> <p>Procedures is the total Medicare payments for services considered part B other procedures (i.e., not anesthesia or dialysis) for a given year. Claims for other procedures are a subset of the claims, and a subset of procedures in the Part B Carrier data file. These other procedure claims are defined as those with a line BETOS code where the first 2 digits are ('P1','P2','P3','P4','P5','P6','P7', or 'P8').</p> <p>Anesthesia is the total Medicare payments for part B anesthesia services for a given year. Anesthesia claims are a subset of the claims, and a subset of procedures in the Part B Carrier data file. Anesthesia claims are defined as those with a line BETOS code where the first 2 digits = "P0" and the units for the carrier line='2'.</p> <p>E&M is the total Medicare payments for the part B evaluation and management services for a given year. E & M claims are a subset of the claims in the Part B Carrier and DME data files, and a subset of physician claims. The E & M claims are defined as those with a line BETOS code where the first digit ='M', but is not M1A or M1B, which are categorized as physician office care in this file.</p> <p>Imaging is the total Medicare payments for imaging services for a given year. Claims for imaging procedures are a subset of the claims, and a subset of procedures in the Part B Carrier and DME data files. These imaging claims are defined as those with a line BETOS code (BETOS_CD) where the first digit =I (except for 'I1E', or 'I1F' – which are considered Part B drugs).</p> <p>Physician visits (E&M in office setting) is the total Medicare payments for the part B physician office services for a given year. Physician office claims are a subset of the claims in the Part B Carrier and DME data files, and a subset of physician evaluation and management claims (note that E&M are tabulated separately in this data file). The physician visit claims are defined as those with a line BETOS code where the first three digits =M1A or M1B (the remainder of physician services which occur in different settings appear in E & M)</p> <p>Tests is the total Medicare payments for part B tests for a given year. Claims for tests are a subset of the claims in the Part B</p>

Measure	Description
	Carrier data file. These claims are defined as those with a line BETOS code where the first digit = T. Part B drugs is the total Medicare payments for Part B drugs for a given year. Part B drug claims are a subset of the claims in the Part B Carrier and DME data files. The Part B drug claims are identified by BETOS codes with values of 'D1G','O1D','O1E','O1G','I1E', or 'I1F'.
Hospital outpatient + ambulatory surgery centers	Hospital outpatient is the total Medicare payments in the hospital outpatient setting for a given year. Calculated as the sum of CLM_PMT_AMT for all HOP claims where the CLM_PMT_AMT >= 0. Ambulatory surgery center is the total Medicare payments in the part B ambulatory surgery center (ASC) setting for a given year. ASC claims are a subset of the claims in the Part B Carrier data file. The ASC claims are identified by the claim lines where the HCFA type service code = 'F'. The total ASC Medicare Payments are calculated as the sum of NCH payment amount where the processing indicator code was ('A','R', or 'S').
SNF	This variable is the total Medicare payments in the skilled nursing facility (SNF) setting for a given year. The total Medicare payments for SNF are calculated as the sum of non-negative claim payment amounts for all SNF claims.
Home health	This variable is the total Medicare payments in the home health (HH) setting for a given year. Calculated as the sum of non-negative claim payment amounts for all HH claims.
DME	Total Medicare payments for part B durable medical equipment (DME) for a given year. Claims for DME are a subset of the claims in the Part B Carrier and DME data files. These claims are defined as those with a line BETOS code where the first three digits are ('D1A','D1B','D1C','D1D','D1E', or 'D1F').
Inpatient utilization	
Inpatient stays	This variable is the count of acute inpatient hospital stays (unique admissions, which may span more than one facility) for the year. An acute inpatient stay is defined as a set of one or more consecutive acute inpatient hospital claims where the beneficiary is only discharged on the most recent claim in the set. If a beneficiary is transferred to a different provider, the acute stay is continued even if there is a discharge date on the claim from which the beneficiary was transferred.
Any inpatient hospitalization	Indicator = 1 if inpatient stays > 0; 0 otherwise
All-cause 30-day readmission	Indicator = 1 for hospital readmission within 30 days of hospital discharge for beneficiaries that were hospitalized; 0 otherwise
Any ACSC admission	Indicator = 1 for any of the following 13 non-pediatric ambulatory care sensitive conditions (ACSCs): 1. Bacterial pneumonia, 2. Hypertension, 3. Dehydration, 4. Adult asthma, 5. Urinary tract infection, 6. Chronic obstructive pulmonary disease (COPD), 7. Perforated appendix, 8. Diabetes short-term complication, 9. Diabetes long-term complication, 10. Angina without procedure, 11. Uncontrolled diabetes, 12. Congestive heart failure (CHF), 13. Lower-extremity amputation among patients with diabetes; 0 otherwise (see AHRQ, AHRQ Quality Indicators, "Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Care Sensitive Conditions," October 2001).
Emergency department and observation utilization	
Any ED visits, no hospital admission	Indicator = 1 if the count of unique emergency department revenue center dates (as a proxy for an ED visit) in the hospital outpatient data file for the year is greater than zero. Revenue center codes indicating Emergency Room use were (0450, 0451, 0452, 0456, or 0459).

Measure	Description
Any ED visits with hospital admission	Indicator = 1 if the count of emergency department (ED) claims in the inpatient setting for the year is greater than zero. The revenue center codes indicating Emergency Room use were (0450, 0451, 0452, 0456, 0459).
Outpatient observation stays	Count of observation stays including those that did and did not result in an inpatient admission. The observation stays that resulted in admission, and are included in the inpatient claim, are identified with revenue center code 0762 in the Inpatient claim file. Medicare-paid observation stays that do not result in an inpatient admission will be found in the Medicare Outpatient file using revenue center code 0762.
Post-acute care and hospice utilization	
SNF days	Count of Medicare covered days in the skilled nursing facility (SNF) setting for the year. This variable equals the sum of the CLM_UTLZTN_DAY_CNT variables on the source claims.
Any hospice use	Indicator = 1 if any hospice spending in the year.
Physician services utilization	
Physician services: office-based E&M visits	Physician office E&M is the count of events in the Part B physician office services (PHYS) for a given year. An event is defined as each line item that contains the relevant service. Physician office claims are a subset of the claims in the Part B Carrier and DME data files, and a subset of physician evaluation and management claims (note that E&M are tabulated separately in this data file). The PHYS claims are defined as those with a line BETOS code where the first three digits =M1A or M1B (the remainder of physician services which occur in different settings appear in E&M).
Physician services: BETOS imaging	Count of events for imaging services (IMG) for a given year. An event is defined as each line item that contains the relevant service. Claims for imaging procedures are a subset of the claims, and a subset of procedures in the Part B Carrier and DME data files. These imaging claims are defined as those with a line BETOS code where the first digit =I (except for 'I1E', or 'I1F' – which are considered Part B drugs).
Physician services: BETOS procedures	Count of events for Part B other procedures for a given year. An event is defined as each line item that contains the relevant service. Claims for other procedures are a subset of the claims in the Part B Carrier data file. These other procedure claims are defined as those with a line BETOS code where the first 2 digits are ('P1','P2','P3','P4','P5','P6','P7', or 'P8')
Physician services: BETOS tests	Count of events in for Part B tests for a given year. An event is defined as each line item that contains the relevant service. Claims for tests are a subset of the claims in the Part B Carrier data file. These claims are defined as those with a line BETOS code where the first digit =T.
Mortality	
Mortality	Indicator =1 for death in the year; 0 otherwise

Measure	Description
Patient/Caregiver Experience (CAHPS)	
Getting Timely Care, Appointments, and Information (ACO #1)	CAHPS survey measure, composite of responses to: In the last 6 months, when you phoned this provider's office to get an appointment for care you needed right away, how often did you get an appointment as soon as you needed? In the last 6 months, when you made an appointment for a check-up or routine care with this provider, how often did you get an appointment as soon as you needed? In the last 6 months, when you phoned this provider's office during regular office hours, how often did you get an answer to your medical question that same day? In the last 6 months, when you phoned this provider's office after regular office hours, how often did you get an answer to your medical question as soon as you needed? In the last 6 months, how often did you see this provider within 15 minutes of your appointment time?
How Well Your Doctors Communicate (ACO #2)	CAHPS survey measure, composite of responses to: In the last 6 months, how often did this provider explain things in a way that was easy to understand? In the last 6 months, how often did this provider listen carefully to you? In the last 6 months, how often did this provider give you easy to understand information about these health questions or concerns? In the last 6 months, how often did this provider seem to know the important information about your medical history? In the last 6 months, how often did this provider show respect for what you had to say? In the last 6 months, how often did this provider spend enough time with you?
Patient's Rating of Doctor (ACO #3)	Using any number from 0 to 10, where 0 is the worst provider possible and 10 is the best provider possible, what number would you use to rate this provider?
Access to Specialists (ACO #4)	CAHPS survey measure, composite of responses to: In the last 6 months, how often was it easy to get appointments with specialists? In the last 6 months, how often did the specialist you saw most seem to know the important information about your medical history?
Health Promotion and Education (ACO #5)	CAHPS survey measure, composite of responses to: Your health care team includes all the doctors, nurses and other people you see for health care. In the last 6 months, did you and anyone on your health care team talk about specific things you could do to prevent illness? In the last 6 months, did you and anyone on your health care team talk about a healthy diet and healthy eating habits? In the last 6 months, did you and anyone on your health care team talk about the exercise or physical activity you get? In the last 6 months, did anyone on your health care team talk with you about specific goals for your health? In the last 6 months, did anyone on your health care team ask you if there was a period of time when you felt sad, empty, or depressed? In the last 6 months, did you and anyone on your health care team talk about things in your life that worry you or cause you stress?

Measure	Description
Shared Decision Making (ACO #6)	CAHPS survey measure, composite of responses to: Did you and this provider talk about the reasons you might want to take a medicine? Did you and this provider talk about the reasons you might not want to take a medicine? When you and this provider talked about starting or stopping a prescription medicine, did this provider ask what you thought was best for you? Did you and this provider talk about the reasons you might want to have the surgery or procedure? Did you and this provider talk about the reasons you might not want to have the surgery or procedure? When you and this provider talked about having surgery or a procedure, did this provider ask what you thought was best for you? In the last 6 months, did you and this provider talk about how much of your personal health information you wanted shared with your family or friends? In the last 6 months, did this provider respect your wishes about how much of your personal health information to share with your family or friends?
Preventive Health	
Depression screening (ACO #18)	GPRO Web Interface reported measure; Full measure name: Preventive Care and Screening; Screening for Clinical Depression and Follow-Up Plan – National Quality Strategy Domain: Community/Population Health; Percentage of patients aged 12 years and older screened for clinical depression on the date of the encounter using an age appropriate standardized depression screening tool AND if positive, a follow-up plan is documented on the date of the positive screen
Colorectal cancer screening (ACO #19)	GPRO Web Interface reported measure; Percentage of patients 50-75 years of age who had appropriate screening for colorectal cancer
Mammography screening (ACO #20)	GPRO Web Interface reported measure
At-risk populations	
Diabetes poor control (ACO#27)	GPRO Web Interface reported measure; Full measure name: Diabetes: Hemoglobin A1c Poor Control – National Quality Strategy Domain: Effective Clinical Care; Percentage of patients 18-75 years of age with diabetes who had hemoglobin A1c > 9.0% during the measurement period. For some analyses I the report, we reverse the scale so that higher is better.
Hypertension (blood pressure control) (ACO #28)	GPRO Web Interface reported measure; Percentage of patients 18 through 85 years of age who had a diagnosis of hypertension and whose blood pressure was adequately controlled (< 140/90 mmHg) during the measurement period
Ischemic vascular disease control (ACO#30)	GPRO Web Interface reported measure; Full measure name is: Ischemic Vascular Disease (IVD): Use of Aspirin or Another Anti-thrombotic – National Quality Strategy Domain: Effective Clinical Care; Percentage of patients 18 years of age and older who were discharged alive for acute myocardial infarction (AMI), coronary artery bypass graft (CABG) or percutaneous coronary interventions (PCI) in the 12 months prior to the measurement period, or who had an active diagnosis of ischemic vascular disease (IVD) during the measurement period, and who had documentation of use of aspirin or another anti-thrombotic during the measurement period

Sources: Chronic Condition Data Warehouse, Master Beneficiary Summary File Cost & Use Segment Codebook, May 2017, Version 1.0; Accountable Care Organization 2015-2017 Quality Measure Narrative Specifications.

Appendix 2A. Overlap between AIM and Other Initiatives

Model	Performance Year 1		Performance Year 2	
	AIM (N=421,533)	COMPARISON (N=3,231,540)	AIM (N=448,313)	COMPARISON (N=2,990,608)
Oncology Care Model	1.52%	1.67%	0.06%	0.11%
Bundled Payments for Care Improvement (BPCI) Initiative:	0.78%	1.01%	0.30%	0.46%
Pioneer ACO	0.00%	0.00%	0.00%	0.00%
Comprehensive ESRD Care	0.00%	0.00%	0.00%	0.12%
NextGeneration ACO	0.00%	0.00%	0.00%	0.00%
Comprehensive Primary Care Initiative	0.00%	0.12%	0.43%	4.97%

Notes: Performance Year (PY) 1 represents 2016 for AIM Test 1 ACOs the following AIM Test 2 ACOs: Sunshine ACO (A2011) and Premier MD (A2084). It represents 2015 for the following AIM Test 2 ACOs; Physicians Collaborative (A1085), Baroma Healthcare International (A1419), Premier Healthcare Network (A1737), and Akira Health (A1737). PY2 represents 2017 for AIM Test 1 ACOs the following AIM Test 2 ACOs: Sunshine ACO (A2011) and Premier MD (A2084). It represents 2016 for the following AIM Test 2 ACOs; Premier Healthcare Network (A1737), and Akira Health (A1737). Note that the count of beneficiaries is slightly lower than those reported in **Appendix Exhibit 1C.1** due to exclusions made when cleaning the data for missing/invalid values.

Sources: ACO Provider RIF and Medicare claims for 2015, 2016, and 2017; information on overlapping initiatives received from CMS in the following files: OCM_BENES_2016, T0_AdHoc_16_AddBENEID_BPCI_Mdl2, T0_AdHoc_16_AddBENEID_BPCI_Mdl3, T4_OVERLAP_01_mdd_selectids_2015, T4_OVERLAP_01_mdd_selectids_2016, T4_OVERLAP_01_mdd_selectids_2017.

Appendix 2B. Number of ACO and Comparison Beneficiaries in Second AIM Performance Year

Test 1 AIM ACO	Number of Beneficiaries Assigned to ACO in PY2	Number of Comparison Beneficiaries in PY2
Carolina Medical Home Network ACO	14,599	93,221
Illinois Rural Community Care Organization	16,813	68,532
Reid ACO	9,744	26,054
Akira Health of Los Angeles	5,871	242,435
Texas Rural ACO	6,285	44,400
Access Care Oklahoma	8,501	116,592
Citrus County ACO	9,308	41,893
AmpliPHY of Texas ACO	5,919	141,613
AmpliPHY of Kentucky ACO	4,002	27,832
Winding River ACO	14,488	35,714
Prairie Hills Care Organization	9,680	10,933
Great Plains Care Organization	10,223	14,426
Mountain Prairie ACO	9,258	39,254
Iowa Rural ACO	10,178	23,410
Illinois Rural ACO	14,250	35,963
Indiana Rural ACO II	5,277	30,034
Indiana Rural ACO	12,614	42,690
Michigan Rural ACO	11,650	34,324
Southern Michigan Rural ACO	8,768	44,593
New Hampshire Rural ACO	11,250	23,674
Ohio River Basin ACO	13,229	58,030
Magnolia-Evergreen ACO	10,354	62,367
North Mississippi Connected Care Alliance	16,904	57,949
Deep South Regional ACO	8,927	73,683
Minnesota Rural ACO	11,498	39,749
Oregon-Indiana ACO	6,726	47,628
Mountain West ACO	9,182	44,644
High Sierras-Northern Plains ACO	8,289	43,862
Aledade Kansas ACO	12,078	35,520
Aledade West Virginia ACO	7,736	80,615
Heartland Physicians ACO	5,415	17,103
Alliance ACO	11,146	72,940
Kentucky Primary Care Alliance Region 2	8,611	72,257
Aledade Mississippi ACO	17,845	164,823
Tar River Health Alliance	10,510	22,599
Affiliated ACO	4,777	9,696
California ACO	20,959	141,609
San Juan ACO	7,955	7,342

Test 1 AIM ACO	Number of Beneficiaries Assigned to ACO in PY2	Number of Comparison Beneficiaries in PY2
Rocky Mountain ACO	13,642	43,519
MissouriHealth+	12,882	191,248
Beacon Rural Health	6,156	13,594

Source: ACO Provider RIF and Medicare claims for 2016 and 2017. See "Report on AIM Impacts in the First Performance Year, 2018" Appendices for PY1 counts

Appendix 2C. Performance Measure Statistical Specification

We estimated separate regressions for each performance measure and each AIM ACO. We estimated cluster-robust standard errors at the beneficiary level for ACO-level analyses since many beneficiaries appeared across multiple years.¹⁵ Since we used market comparison groups for each ACO, we assumed that all errors within a geographic market are drawn from the same distribution (i.e., there is no correlation of errors within any subunit of the defined geographic market). However, for pooled analyses, we clustered standard errors for each of the 41 Test 1 ACO markets to account for correlation within the entire market.¹⁶ **Exhibit 2C-1** shows the statistical specification used for each measure mapped by data type.

Exhibit 2C-1. Performance Measures and Corresponding Statistical Specification

Data Type	Performance Measure	Statistical Specification
Continuous payment	<ul style="list-style-type: none"> Total Medicare payment Medicare physician services payment 	Generalized Linear Model (GLM) with log link and gamma distributed error
Continuous payment with mass at \$0	<ul style="list-style-type: none"> Medicare acute inpatient payment Outpatient payment Skilled nursing facility payment Home health payment Durable medical equipment payment 	Two part model. Logit for binary probability of nonzero payment. GLM with log link and gamma distribution error for continuous payment, conditional on any payment
Binary outcomes	<ul style="list-style-type: none"> Any inpatient hospitalization Any observation stay Any ED visit, no hospitalization Any ED visit with hospitalization Any hospice use Any all cause 30-day readmission Any hospitalization for ambulatory sensitive condition Mortality 	Logit
Continuous utilization [a]	<ul style="list-style-type: none"> Number of E&M visits Number of imaging events Number of tests Number of procedures 	GLM with log link and gamma distributed error
Count utilization with hurdle at 0	<ul style="list-style-type: none"> Number of inpatient hospitalizations Number of SNF days 	Two-part model. Logit for binary probability of "any utilization" and negative binomial for count of utilization conditional on any utilization

[a] Although these are technically count variables (non-negative and integer-valued), the distribution is so large, with right tails extending into the hundreds, that the data are better approximated by a continuous gamma distribution.

¹⁵ Clustering at the beneficiary level accounts for correlation across observations that would occur when the same beneficiary appears in multiple years.

¹⁶ Higher-level clusters account for lower-level correlations as long as the lower levels are nested within the higher ones (i.e., all beneficiaries reside within a single market). Therefore, market-level clusters account for beneficiary-level correlation in our pooled models.

Appendix 2D. Risk Adjustment and Covariate Balancing

Risk Factors

The preferred model accounted for the following observable characteristics:

- *Sex, race/ethnicity (black, Hispanic, other), age (0-64, 65-74, 75-84, >85), ESRD, originally qualified for Medicare due to disability, dual Medicare/Medicaid eligibility, resident of long-term institutional facility*: These characteristics were used in prior peer-reviewed literature and are factors well known to influence health outcomes.
- *HCC score, squared HCC Score*: Previous studies included HCC score. While HCC score was designed to predict total spending, it was not designed to predict utilization outcomes or sub-categories of spending. We therefore hypothesized that the relationship between our measures and HCC score might be nonlinear and thus included HCC squared in models. This approach was confirmed by empirical tests showing that squared HCC score was strongly and significantly correlated with our measures of interest, even conditional on chronic condition indicators. Both HCC and HCC squared were lagged by three years so that AIM participation does not influence these characteristics. Applying a three-year lag (rather than a one-year lag) allows for consistent risk adjustment models through the three performance years for which this evaluation will cover.¹⁷
- *Chronic condition indicators, number of concurrent chronic conditions (two, three, four, five, six or more)*: Chronic conditions and counts of multiple chronic conditions influence health outcomes and were used to control for health status in the prior literature. We categorized the 27 available chronic condition indicators into 11 groups and included indicators for counts of the number of conditions. All chronic condition variables were also lagged by three years for the same reasons as described above.¹⁸
- *Received care from AIM participant but was not assigned to AIM ACO*: We included an indicator to differentiate beneficiaries in the comparison group who had received some care from AIM ACOs from those that did not. These beneficiaries who received “spillover” care were significantly less healthy and had higher spending on average than non-spillover comparison beneficiaries. We did not think it was valid to remove these beneficiaries from the analytic sample as they are part of the ACO’s market, but we separately control for them since they clearly differ from pure comparison beneficiaries in important ways.
- *Death in year*: An indicator for a beneficiary dying in the year was included in all performance measure models except for the mortality regression. Prior literature is mixed on its inclusion.¹⁹ If mortality is influenced by AIM, it would not be appropriate to control for it, but if mortality is unlikely to be influenced by AIM, not including it could bias our estimates because it is such a strong predictor of health care spending and is highly correlated with other outcomes. Therefore,

¹⁷ If a beneficiary did not have a three-year lagged HCC score, then we used their “New Enrollee” HCC score from any time in the last three years as the lagged HCC score.

¹⁸ If a beneficiary did not have three-year lagged chronic condition flags, then we coded the flags (and the sums of the flags) as zero. We included an additional indicator for “missing lagged variables” that equaled 1 if the lagged chronic condition flags were missing and 0 otherwise.

¹⁹ Nyweide et al. (2015) control for death, while the other studies listed in footnote 27 do not.

small differential changes in the mortality rate over time between the AIM and comparison groups that were unrelated to AIM could bias our estimates. Ultimately, we included a control for mortality in the preferred specification, which errs on the side of conservative estimates of AIM impacts (i.e., potentially understating the savings) attributable to AIM.

- *Months eligible for FFS Medicare during year:* We included controls for each beneficiary’s number of eligible months in the year. The primary reason for fewer than 12 eligible months in a year is mortality but may also be from new Medicare enrollment.²⁰ Since utilization measures are “per year,” controlling for eligible months ensures that measures are estimated on the same relative time across all beneficiaries. Although spending measures are “per month,” a beneficiary’s average monthly spending is more precise with 12 months of spending data than with fewer than 12 months of data. Therefore, controlling for eligible months accounts for variation in the spending measures.

Lastly, we included PCSA fixed effects²¹ and year fixed effects. We did not include any market-level variables for each AIM ACO since market comparison groups were designed so that the ACO and comparison groups face similar market environments. Moreover, ACO markets are geographically confined, so there is little variation in rurality or economic conditions that could bias our impact estimates if they were excluded or that could improve efficiency if they were included.

When estimating overall AIM Test 1 impacts, we estimated “pooled” models whereby all ACO and comparison beneficiaries for the 41 ACOs were included in one model. The pooled models (also used in subgroup analyses) did not utilize PCSA fixed effects because the number of PCSAs was too numerous to include in our preferred nonlinear models. This approach allowed more possibility for within-market differences in geographic characteristics that may influence outcomes. Therefore, in all pooled models we also controlled for the following characteristics:

- *Rural-Urban Commuting Area (RUCA) code:* The RUCA score ranges from 1-10, with 1 indicating the most dense urban areas, and 10 the most sparse rural areas, as defined by both population and accessibility of more densely populated areas. A RUCA code of 4 or greater indicates a rural area. We had access to RUCA codes at the ZIP Code level, and we included indicator variables for beneficiaries residing in each unique RUCA score to allow for nonlinear impacts of rurality on the outcomes of interest.
- *Primary and Mental Health Professional Shortage Areas (HPSA):* CMS uses ZIP Code-level designations of primary and mental health HPSAs to determine potential bonus payments to physicians in areas with low access to certain types of health care. We included separate indicators for beneficiaries residing in primary care HPSAs and mental health HPSAs.

Each of the 41 ACO-level impact estimates controls for time trends within the market that are common to the AIM assigned beneficiaries and the comparison group. Therefore, in addition to fixed effects for each of the 41 AIM ACO markets, our pooled models also included a unique linear time trend for each ACO (i.e., the ACO fixed effects were interacted with a continuous time trend).

²⁰ Per the Shared Savings Program eligibility criteria, we excluded beneficiaries with any months of Medicare Advantage (Part C) or any months of only Part A or B from the sample.

²¹ All assigned beneficiaries outside of the defined ACO market were assigned to a single, artificial PCSA, so that the model controlled for “living outside of ACO market.” For the average AIM ACO, 7.9 percent of beneficiaries lived outside the ACO market.

Covariate Balancing

Covariate balancing refers to methods for ensuring that the risk factors selected are balanced (or proportional) in the ACO and comparison group. Balance between ACO and comparison beneficiaries is desirable because it reduces potential bias in the estimated ACO 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 adjusters are essential contributors to achieving balance in covariates between ACO and comparison groups.

To improve covariate balance, we estimated weights that account for observable differences between the ACO 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).²² EB balances distributions, not simply means, across ACO and comparison groups, so covariate balance under EB should be an improvement over the balance achieved by applying inverse propensity score weights. We calculated EB weights to balance covariates between the ACO and comparison groups²³ and then estimated weighted regressions.

²² 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.

²³ Hainmueller, Jens and Yiquing Xu. (2013) “eBalance: A Stata Package for Entropy Balancing.” *Journal of Statistical Software*, Vol. 54(7). pp.1-18.

Appendix 2E. Parallel Trends Testing

The parallel trends assumption stipulates that the outcomes of an ACO and comparison group should be on a parallel trajectory before an intervention begins so that any differences in outcomes after the intervention begins can be attributed to the intervention itself. We tested the parallel trends assumption for all performance measures at the pooled level and tested parallel trends for total Medicare spending for the subgroup analyses and the ACO-level impact estimates.

We conducted parallel trends tests according to the following approach:

- We limited the sample to the baseline period (2013-2015) so that AIM did not influence the outcome of interest.
- We estimated the full risk adjustment model (including EB weights) with two linear time trends across 2013-2015: one for beneficiaries assigned to an AIM ACO and one for comparison beneficiaries from the ACO's market.
- We tested whether the two time trends were significantly different from one another at the 5 percent level. A significant difference implies that the AIM ACOs and their market comparison groups were not following parallel trends in the baseline.

As a robustness check, we repeated this test by estimating a more flexible model. Instead of a linear time trend for AIM ACOs, this model included indicator variables for AIM ACOs in each baseline year. We then calculated the change between AIM ACOs and the comparison group from 2013 to 2014 and from 2014 to 2015, and tested for the joint significance of these two changes over time. This methodology allowed for a non-linear trend between 2013 and 2015.

In the pooled DID models, our testing indicated parallel linear baseline trends for all outcomes. Estimates for DME spending and the number of imaging events failed the more rigorous test of parallel nonlinear trends with $p < 0.05$. We would expect at least one outcome to fail at the 5% level by chance so these results are not concerning. Importantly, our key findings pertaining to total Medicare spending and reductions in inpatient admissions, ED visits, and SNF days, all passed parallel trends.

The parallel trends assumption for the total Medicare spending outcome failed for eight AIM ACOs at the 5 percent significance level and six AIM ACOs at the 1 percent significance level (these counts were 11 and 7, respectively, under the more rigorous test of nonlinear trends). Although this failure rate was higher than what we would have expected due to chance alone, the pooled parallel trends tests indicate that, on average, discrepancies at the market level average out. This finding is corroborated by the fact that of the eight estimates indicating non-parallel linear trends, two were positive. The average of the difference in linear trends across all 41 AIM ACOs was \$0.40. Limited to the eight ACO markets that failed the test of parallel linear trends, the average of the difference in linear trends was just \$2.10. Thus, while ACO-level estimates must be interpreted with some caution, our estimated reductions in Medicare spending at the pooled model level are not invalidated by potential differences in underlying baseline trends.

Appendix 2F. AIM Test 1 ACO DID Results in the Second Performance Year

Exhibit 2F-1. Per Beneficiary per Month Medicare Spending (Total, Acute inpatient, Outpatient and Physician)

ACO Name	Total Spending		Inpatient Spending		Outpatient Spending		Physician Spending	
	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value
Carolina Medical Home Network ACO	-34.15	0.096	-14.91	0.138	-0.10	0.978	-4.76	0.075
Illinois Rural Community Care Organization	24.82	0.217	11.18	0.225	-6.39	0.088	1.17	0.674
Reid ACO	19.95	0.564	5.28	0.720	2.91	0.692	10.79	0.001
Akira Health of Los Angeles	-315.84	0.000	-82.82	0.000	-18.12	0.002	-20.79	0.002
Texas Rural ACO	-97.70	0.023	-20.21	0.271	-18.88	0.005	-15.92	0.009
Access Care Oklahoma	1.36	0.959	-0.52	0.963	3.33	0.476	5.92	0.089
Citrus County ACO	-85.01	0.000	-38.63	0.000	-18.27	0.000	17.47	0.006
AmpliPHY of Texas ACO	4.90	0.909	-4.71	0.777	2.09	0.739	-5.68	0.369
AmpliPHY of Kentucky ACO	-45.76	0.113	-20.40	0.175	-0.82	0.896	3.21	0.475
Winding River ACO	-18.40	0.363	-14.43	0.160	6.80	0.082	-7.17	0.014
Prairie Hills Care Organization	-66.10	0.024	-46.09	0.001	-9.67	0.273	-2.65	0.353
Great Plains Care Organization	-13.42	0.617	0.48	0.972	0.46	0.944	0.93	0.799
Mountain Prairie ACO	-6.84	0.808	10.74	0.423	-20.76	0.000	1.89	0.585
Iowa Rural ACO	-29.88	0.215	4.10	0.726	-0.39	0.948	-0.61	0.822
Illinois Rural ACO	29.58	0.175	11.39	0.291	3.95	0.284	12.19	0.001
Indiana Rural ACO II	-19.46	0.628	-5.19	0.776	0.68	0.931	1.33	0.701
Indiana Rural ACO	-23.49	0.339	8.37	0.446	4.90	0.318	-4.04	0.090
Michigan Rural ACO	-38.11	0.103	-26.54	0.022	0.13	0.979	-0.66	0.825
Southern Michigan Rural ACO	-28.94	0.250	-19.65	0.106	-12.22	0.011	2.63	0.445
New Hampshire Rural ACO	-110.80	0.000	-40.11	0.002	-26.19	0.000	-4.61	0.043
Ohio River Basin ACO	-26.78	0.227	-21.03	0.045	-1.13	0.791	0.75	0.763
Magnolia-Evergreen ACO	9.56	0.675	18.29	0.101	-4.53	0.366	7.21	0.007
North Mississippi Connected Care Alliance	-39.00	0.023	-11.72	0.129	-8.71	0.045	-1.27	0.531
Deep South Regional ACO	-24.94	0.391	-17.42	0.118	-7.34	0.079	-0.67	0.884
Minnesota Rural ACO	-31.77	0.140	-25.37	0.040	-22.33	0.000	5.50	0.017
Oregon-Indiana ACO	33.65	0.299	1.17	0.935	2.63	0.629	3.82	0.260
Mountain West ACO	-33.19	0.143	-10.03	0.386	-8.07	0.179	1.45	0.582
High Sierras-Northern Plains ACO	-23.08	0.360	-16.77	0.231	-1.89	0.710	-4.78	0.211
Aledade Kansas ACO	-14.72	0.492	-2.65	0.794	-12.25	0.006	5.63	0.082
Aledade West Virginia ACO	-70.13	0.003	-35.80	0.003	-11.51	0.008	-2.96	0.312
Heartland Physicians ACO	-77.28	0.016	-14.21	0.322	-12.29	0.054	-6.05	0.154
Alliance ACO	-85.09	0.000	-24.10	0.014	3.17	0.423	-10.13	0.013
Kentucky Primary Care Alliance Region 2	-46.59	0.071	-12.99	0.277	-8.90	0.024	2.10	0.493
Aledade Mississippi ACO	-69.18	0.000	-16.99	0.023	-8.33	0.019	-0.29	0.901
Tar River Health Alliance	55.43	0.036	24.18	0.072	6.30	0.245	17.98	0.000
Affiliated ACO	-24.01	0.569	18.24	0.388	-37.36	0.000	-5.30	0.244
California ACO	-14.15	0.409	-10.90	0.316	0.28	0.935	3.22	0.121
San Juan ACO	-83.50	0.008	-9.24	0.572	-1.59	0.861	-4.93	0.152
Rocky Mountain ACO	-26.93	0.174	-0.53	0.965	4.73	0.316	-2.25	0.373
MissouriHealth+	-64.22	0.000	-20.69	0.042	-7.99	0.041	-11.78	0.000
Beacon Rural Health	-5.77	0.861	-5.07	0.756	9.23	0.288	5.44	0.057

Note: Represent the estimated impact of AIM on the performance measure listed in each column based on the DID model described in **Chapter 2**. Statistical significance at the 5 percent level are shaded. The claims-based measures are described in **Appendix 1F**.

Exhibit 2F-2. Per Beneficiary per Month Medicare Spending (SNF, HHA, and DME)

ACO Name	SNF Spending		HHA Spending		DME Spending	
	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value
Carolina Medical Home Network ACO	-8.36	0.017	-2.32	0.129	0.38	0.568
Illinois Rural Community Care Organization	21.70	0.000	1.98	0.108	-0.95	0.079
Reid ACO	2.73	0.690	-1.63	0.396	-0.59	0.450
Akira Health of Los Angeles	-35.94	0.000	-18.35	0.000	-1.47	0.099
Texas Rural ACO	-7.63	0.312	-8.21	0.080	-1.46	0.148
Access Care Oklahoma	7.45	0.131	-1.08	0.697	0.48	0.549
Citrus County ACO	-21.81	0.000	-15.85	0.000	-1.23	0.074
AmpliPHY of Texas ACO	-3.19	0.612	5.92	0.186	1.04	0.248
AmpliPHY of Kentucky ACO	-9.29	0.232	-2.99	0.241	0.60	0.526
Winding River ACO	2.60	0.572	-2.71	0.145	-1.56	0.015
Prairie Hills Care Organization	-14.61	0.084	1.45	0.155	-0.44	0.497
Great Plains Care Organization	-18.80	0.009	0.77	0.520	-0.09	0.890
Mountain Prairie ACO	20.05	0.006	-2.16	0.327	-1.52	0.070
Iowa Rural ACO	-6.28	0.361	-2.70	0.040	-1.40	0.035
Illinois Rural ACO	-7.08	0.188	0.93	0.599	0.33	0.589
Indiana Rural ACO II	-5.92	0.502	-0.21	0.928	2.40	0.020
Indiana Rural ACO	-6.25	0.263	-2.54	0.081	-0.25	0.687
Michigan Rural ACO	-1.86	0.705	-4.01	0.008	-0.17	0.767
Southern Michigan Rural ACO	-4.46	0.337	5.37	0.007	0.07	0.923
New Hampshire Rural ACO	-23.17	0.003	-7.04	0.000	-2.10	0.000
Ohio River Basin ACO	-5.06	0.241	5.17	0.002	-0.51	0.441
Magnolia-Evergreen ACO	-9.81	0.099	-2.88	0.130	-0.25	0.694
North Mississippi Connected Care Alliance	-13.39	0.001	-2.74	0.116	-3.71	0.000
Deep South Regional ACO	1.47	0.781	1.21	0.579	3.40	0.001
Minnesota Rural ACO	-8.47	0.074	-0.68	0.445	-0.06	0.913
Oregon-Indiana ACO	-5.30	0.464	2.70	0.181	0.83	0.367
Mountain West ACO	3.30	0.610	-3.93	0.005	-1.55	0.015
High Sierras-Northern Plains ACO	-14.53	0.019	-4.29	0.002	1.41	0.052
Aledade Kansas ACO	-17.91	0.002	-4.14	0.014	0.22	0.762
Aledade West Virginia ACO	-10.30	0.007	2.07	0.302	-0.54	0.533
Heartland Physicians ACO	-8.67	0.326	1.31	0.512	-1.84	0.028
Alliance ACO	-20.48	0.000	-5.39	0.045	0.72	0.291
Kentucky Primary Care Alliance Region 2	-8.59	0.074	-2.21	0.260	0.60	0.489
Aledade Mississippi ACO	3.61	0.306	-16.61	0.000	-3.58	0.000
Tar River Health Alliance	0.65	0.895	7.46	0.000	0.80	0.322
Affiliated ACO	1.33	0.895	2.26	0.234	-0.44	0.639
California ACO	-9.10	0.021	-6.47	0.000	-1.14	0.007
San Juan ACO	-13.35	0.076	-3.62	0.061	-3.14	0.001
Rocky Mountain ACO	-11.08	0.069	-4.34	0.006	-1.06	0.060
MissouriHealth+	0.01	0.998	-1.78	0.183	-0.73	0.206
Beacon Rural Health	-26.89	0.002	-2.82	0.194	-0.12	0.884

Note: Represent the estimated impact of AIM on the performance measure listed in each column based on the DID model described in **Chapter 2**. Statistical significance at the 5 percent level are shaded. The claims-based measures are described in **Appendix 1F**.

Exhibit 2F-3. Any and Total Stays (Acute Hospitalization, ED with and without Hospitalization)

ACO Name	Any Acute Stay		Total Acute Stays		ED Visit – No Acute		ED Visit - Acute	
	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value
Carolina Medical Home Network ACO	-1.0	0.012	0.0	0.097	-0.4	0.266	-0.2	0.607
Illinois Rural Community Care Organization	0.0	0.913	0.0	0.743	0.7	0.013	-1.4	0.001
Reid ACO	0.3	0.589	0.0	0.962	0.0	0.971	-0.3	0.633
Akira Health of Los Angeles	-2.7	0.000	-0.1	0.000	-3.1	0.000	-0.3	0.673
Texas Rural ACO	-1.0	0.100	0.0	0.202	-0.4	0.499	-1.3	0.054
Access Care Oklahoma	0.2	0.701	0.0	0.594	1.1	0.027	-1.3	0.021
Citrus County ACO	-1.4	0.007	0.0	0.000	-0.6	0.147	-1.6	0.001
AmpliPHY of Texas ACO	0.5	0.420	0.0	0.812	0.4	0.518	-1.5	0.008
AmpliPHY of Kentucky ACO	-0.8	0.279	0.0	0.199	-0.5	0.414	1.5	0.041
Winding River ACO	-1.1	0.010	0.0	0.001	-0.9	0.010	-0.5	0.252
Prairie Hills Care Organization	-1.2	0.070	0.0	0.010	-1.3	0.006	-0.8	0.218
Great Plains Care Organization	0.5	0.429	0.0	0.815	1.0	0.014	-2.9	0.000
Mountain Prairie ACO	-0.4	0.450	0.0	0.812	1.2	0.003	-2.4	0.000
Iowa Rural ACO	0.3	0.559	0.0	0.451	0.3	0.432	0.3	0.592
Illinois Rural ACO	0.7	0.144	0.0	0.065	0.3	0.500	-0.2	0.635
Indiana Rural ACO II	-0.3	0.684	0.0	0.681	0.7	0.248	-0.4	0.621
Indiana Rural ACO	0.7	0.139	0.0	0.127	0.2	0.576	0.5	0.350
Michigan Rural ACO	-0.8	0.125	0.0	0.049	0.1	0.783	-0.5	0.319
Southern Michigan Rural ACO	0.1	0.868	0.0	0.863	-0.6	0.185	0.3	0.601
New Hampshire Rural ACO	-1.5	0.002	0.0	0.006	0.4	0.252	-1.9	0.002
Ohio River Basin ACO	-0.8	0.068	0.0	0.007	-0.5	0.231	1.0	0.057
Magnolia-Evergreen ACO	-0.5	0.298	0.0	0.690	-0.9	0.020	0.6	0.254
North Mississippi Connected Care Alliance	0.1	0.707	0.0	0.854	0.3	0.435	0.0	0.951
Deep South Regional ACO	-0.4	0.442	0.0	0.099	-0.2	0.665	0.2	0.657
Minnesota Rural ACO	0.0	0.972	0.0	0.940	-1.2	0.002	-1.3	0.009
Oregon-Indiana ACO	-0.6	0.310	0.0	0.981	0.0	0.966	-0.2	0.715
Mountain West ACO	-1.1	0.040	0.0	0.153	0.1	0.767	-1.2	0.037
High Sierras-Northern Plains ACO	-0.2	0.745	0.0	0.330	-0.7	0.090	-0.6	0.257
Aledade Kansas ACO	-0.1	0.817	0.0	0.304	0.3	0.352	-1.1	0.035
Aledade West Virginia ACO	-1.7	0.002	0.0	0.000	-1.8	0.000	-1.0	0.055
Heartland Physicians ACO	-1.6	0.026	0.0	0.095	-1.3	0.006	-2.5	0.001
Alliance ACO	-0.4	0.322	0.0	0.003	-0.4	0.322	-0.8	0.096
Kentucky Primary Care Alliance Region 2	-0.7	0.137	0.0	0.170	-0.3	0.521	-2.3	0.000
Aledade Mississippi ACO	-0.8	0.018	0.0	0.011	-0.4	0.197	0.5	0.144
Tar River Health Alliance	-0.2	0.709	0.0	0.603	-0.2	0.685	-0.4	0.432
Affiliated ACO	1.3	0.119	0.0	0.189	0.2	0.709	-1.8	0.048
California ACO	-0.1	0.813	0.0	0.703	-0.4	0.160	0.0	0.893
San Juan ACO	-1.5	0.029	0.0	0.124	-1.0	0.084	-0.4	0.646
Rocky Mountain ACO	0.3	0.449	0.0	0.543	0.3	0.247	0.4	0.383
MissouriHealth+	-0.6	0.160	0.0	0.062	-1.0	0.010	0.5	0.325
Beacon Rural Health	-0.4	0.589	0.0	0.722	-0.3	0.472	-1.1	0.158

Note: Represent the estimated impact of AIM on the performance measure listed in each column based on the DID model described in **Chapter 2**. Statistical significance at the 5 percent level are shaded. The claims-based measures are described in **Appendix 1F**.

Exhibit 2F-4. SNF days, Observational Services, Any Hospice Use

ACO Name	SNF Days		Observational Stays		Any Hospice	
	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value
Carolina Medical Home Network ACO	-0.2	0.044	-1.1	0.000	-0.3	0.011
Illinois Rural Community Care Organization	0.4	0.002	-0.8	0.009	0.2	0.251
Reid ACO	0.1	0.647	0.2	0.617	-0.1	0.457
Akira Health of Los Angeles	-0.7	0.000	-0.8	0.087	0.3	0.420
Texas Rural ACO	-0.2	0.403	-0.3	0.517	-0.2	0.343
Access Care Oklahoma	0.2	0.152	-0.7	0.066	0.0	0.864
Citrus County ACO	-0.5	0.000	-0.9	0.018	-0.2	0.161
AmpliPHY of Texas ACO	-0.1	0.432	-0.5	0.309	-0.3	0.114
AmpliPHY of Kentucky ACO	-0.1	0.571	1.6	0.004	-0.1	0.716
Winding River ACO	0.1	0.268	0.4	0.190	-0.2	0.253
Prairie Hills Care Organization	-0.2	0.280	-1.6	0.000	0.3	0.132
Great Plains Care Organization	-0.3	0.064	-0.2	0.655	-0.3	0.213
Mountain Prairie ACO	0.4	0.010	0.0	0.946	0.2	0.250
Iowa Rural ACO	0.1	0.602	-0.1	0.770	-0.2	0.333
Illinois Rural ACO	-0.2	0.248	-0.6	0.096	0.1	0.708
Indiana Rural ACO II	0.0	0.855	-1.9	0.000	0.0	0.902
Indiana Rural ACO	-0.1	0.373	-0.9	0.019	-0.3	0.074
Michigan Rural ACO	-0.1	0.280	-0.4	0.195	-0.3	0.089
Southern Michigan Rural ACO	-0.1	0.448	-0.6	0.157	-0.4	0.017
New Hampshire Rural ACO	-0.2	0.059	-0.7	0.044	-0.1	0.687
Ohio River Basin ACO	-0.2	0.134	0.4	0.289	0.0	0.743
Magnolia-Evergreen ACO	-0.3	0.008	0.2	0.588	0.1	0.470
North Mississippi Connected Care Alliance	-0.5	0.000	0.5	0.097	0.1	0.595
Deep South Regional ACO	0.0	0.873	-0.9	0.016	-0.7	0.001
Minnesota Rural ACO	-0.3	0.010	-1.0	0.000	0.1	0.391
Oregon-Indiana ACO	-0.3	0.214	-0.7	0.164	0.0	0.853
Mountain West ACO	-0.1	0.353	-0.4	0.286	-0.1	0.594
High Sierras-Northern Plains ACO	-0.3	0.009	-1.3	0.000	0.1	0.477
Aledade Kansas ACO	-0.2	0.068	-0.3	0.395	-0.1	0.734
Aledade West Virginia ACO	-0.4	0.001	-0.3	0.545	-0.1	0.492
Heartland Physicians ACO	-0.1	0.401	-0.2	0.666	0.0	0.854
Alliance ACO	-0.7	0.000	0.1	0.659	-0.4	0.005
Kentucky Primary Care Alliance Region 2	-0.3	0.031	-0.8	0.044	0.0	0.823
Aledade Mississippi ACO	0.1	0.522	-0.3	0.214	-0.2	0.045
Tar River Health Alliance	-0.1	0.385	-0.1	0.667	0.5	0.001
Affiliated ACO	0.2	0.340	-0.9	0.099	0.3	0.270
California ACO	-0.1	0.075	-1.3	0.000	0.0	0.840
San Juan ACO	-0.3	0.082	0.3	0.503	-0.1	0.637
Rocky Mountain ACO	-0.1	0.369	-0.9	0.001	-0.2	0.065
MissouriHealth+	0.0	0.729	0.0	0.964	0.0	0.929
Beacon Rural Health	-0.3	0.075	-0.1	0.801	0.0	0.898

Note: Represent the estimated impact of AIM on the performance measure listed in each column based on the DID model described in **Chapter 2**. Statistical significance at the 5 percent level are shaded. The claims-based measures are described in **Appendix 1F**.

Exhibit 2F-5. E&M Visits, Tests, Procedures, and Imaging Events

ACO Name	E&M Visits		Tests		Procedures		Imaging Events	
	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value
Carolina Medical Home Network ACO	0.0	0.454	0.6	0.000	-0.3	0.001	0.1	0.292
Illinois Rural Community Care Organization	0.6	0.000	0.6	0.000	0.2	0.060	0.2	0.021
Reid ACO	0.9	0.000	0.7	0.001	0.1	0.291	-0.1	0.559
Akira Health of Los Angeles	-0.5	0.001	-1.5	0.000	0.3	0.393	-0.5	0.000
Texas Rural ACO	-0.4	0.003	-2.6	0.000	-0.4	0.006	-0.4	0.001
Access Care Oklahoma	0.2	0.038	2.0	0.000	0.0	0.975	0.2	0.021
Citrus County ACO	-0.1	0.555	7.4	0.000	1.8	0.000	-0.2	0.036
AmpliPHY of Texas ACO	0.4	0.004	-1.0	0.002	0.3	0.090	-0.2	0.049
AmpliPHY of Kentucky ACO	0.3	0.017	-0.6	0.021	-0.4	0.116	0.0	0.968
Winding River ACO	0.2	0.056	-0.7	0.001	0.1	0.628	0.1	0.335
Prairie Hills Care Organization	-0.5	0.000	0.3	0.059	0.5	0.001	-0.3	0.001
Great Plains Care Organization	0.9	0.000	0.6	0.001	-0.1	0.306	0.1	0.086
Mountain Prairie ACO	0.5	0.000	-0.2	0.369	-0.2	0.208	0.0	0.813
Iowa Rural ACO	-0.1	0.155	-0.3	0.015	0.0	0.809	-0.2	0.007
Illinois Rural ACO	0.7	0.000	1.3	0.000	0.4	0.008	0.3	0.000
Indiana Rural ACO II	0.1	0.621	-0.2	0.171	0.0	0.884	0.0	0.752
Indiana Rural ACO	-0.3	0.000	0.3	0.024	-0.1	0.339	-0.4	0.000
Michigan Rural ACO	0.0	0.761	-0.3	0.026	0.3	0.006	0.2	0.007
Southern Michigan Rural ACO	0.3	0.001	0.7	0.000	0.0	0.852	0.0	0.687
New Hampshire Rural ACO	-0.3	0.000	1.2	0.000	0.2	0.331	-0.3	0.001
Ohio River Basin ACO	0.1	0.275	1.1	0.000	0.0	0.696	0.2	0.016
Magnolia-Evergreen ACO	0.1	0.119	-0.1	0.378	-0.3	0.031	0.0	0.883
North Mississippi Connected Care Alliance	-0.3	0.000	1.1	0.000	0.3	0.072	-0.2	0.011
Deep South Regional ACO	0.0	0.932	-0.2	0.254	0.5	0.008	0.0	0.930
Minnesota Rural ACO	-0.1	0.148	1.5	0.000	0.6	0.000	0.0	0.512
Oregon-Indiana ACO	-0.1	0.223	0.7	0.000	0.0	0.694	0.1	0.467
Mountain West ACO	0.5	0.000	0.7	0.000	0.0	0.906	0.1	0.052
High Sierras-Northern Plains ACO	0.2	0.053	0.3	0.077	-0.6	0.001	-0.3	0.001
Aledade Kansas ACO	0.6	0.000	0.1	0.361	0.1	0.523	-0.2	0.012
Aledade West Virginia ACO	-0.2	0.044	0.2	0.237	0.3	0.121	-0.4	0.000
Heartland Physicians ACO	-0.3	0.013	-0.1	0.829	-0.6	0.002	-0.3	0.008
Alliance ACO	0.3	0.001	-0.2	0.353	1.0	0.000	-0.1	0.359
Kentucky Primary Care Alliance Region 2	0.2	0.003	-0.3	0.251	-0.1	0.345	0.0	0.652
Aledade Mississippi ACO	-0.2	0.000	0.6	0.000	0.9	0.000	-0.6	0.000
Tar River Health Alliance	0.7	0.000	2.8	0.000	0.0	0.986	0.3	0.001
Affiliated ACO	-0.6	0.000	-1.0	0.032	-0.4	0.045	-0.2	0.164
California ACO	-0.7	0.000	4.1	0.000	0.5	0.000	-0.1	0.008
San Juan ACO	0.0	0.845	0.8	0.000	0.0	0.937	-0.1	0.558
Rocky Mountain ACO	-0.1	0.148	1.0	0.000	-0.7	0.000	0.2	0.010
MissouriHealth+	-0.1	0.020	-0.5	0.017	-0.3	0.001	-0.2	0.003
Beacon Rural Health	0.4	0.000	0.3	0.068	0.4	0.002	-0.1	0.406

Note: Represent the estimated impact of AIM on the performance measure listed in each column based on the DID model described in **Chapter 2**. Statistical significance at the 5 percent level are shaded. The claims-based measures are described in **Appendix 1F**.

Exhibit 2F-6. Any All-Cause 30-day Readmissions, Any ASC Stay, Mortality

Aco Name	Any Readmission		Any Asc Stay		Mortality	
	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value
Carolina Medical Home Network ACO	-0.3	0.257	-0.4	0.018	0.0	0.899
Illinois Rural Community Care Organization	-0.4	0.073	0.0	0.855	0.1	0.485
Reid ACO	0.0	0.899	-0.1	0.703	-0.3	0.227
Akira Health of Los Angeles	-1.0	0.009	-1.0	0.002	0.5	0.181
Texas Rural ACO	-0.2	0.558	-0.1	0.700	0.3	0.404
Access Care Oklahoma	0.2	0.580	-0.1	0.746	-0.4	0.081
Citrus County ACO	-0.9	0.001	-0.3	0.119	0.0	0.898
AmpliPHY of Texas ACO	0.4	0.256	-0.4	0.142	0.4	0.104
AmpliPHY of Kentucky ACO	-0.9	0.025	-0.4	0.264	0.3	0.428
Winding River ACO	0.1	0.646	-0.4	0.022	0.1	0.574
Prairie Hills Care Organization	-0.2	0.617	-0.4	0.149	-0.4	0.260
Great Plains Care Organization	-0.1	0.679	0.0	0.980	-0.1	0.736
Mountain Prairie ACO	0.2	0.505	0.1	0.668	-0.5	0.053
Iowa Rural ACO	0.7	0.008	0.0	0.953	0.0	0.930
Illinois Rural ACO	0.1	0.614	0.2	0.412	-0.5	0.024
Indiana Rural ACO II	0.2	0.531	-0.1	0.859	0.6	0.079
Indiana Rural ACO	0.8	0.006	-0.1	0.655	-0.2	0.421
Michigan Rural ACO	-0.6	0.034	-0.4	0.059	0.4	0.057
Southern Michigan Rural ACO	-0.1	0.622	0.2	0.398	0.2	0.305
New Hampshire Rural ACO	-0.8	0.003	-0.4	0.017	-0.3	0.278
Ohio River Basin ACO	-0.3	0.354	-0.4	0.039	0.1	0.499
Magnolia-Evergreen ACO	-0.2	0.431	0.3	0.086	-0.2	0.256
North Mississippi Connected Care Alliance	0.3	0.130	0.2	0.109	-0.3	0.056
Deep South Regional ACO	0.0	0.898	-0.3	0.156	0.1	0.564
Minnesota Rural ACO	0.1	0.576	0.1	0.512	-0.1	0.737
Oregon-Indiana ACO	0.1	0.804	-0.2	0.426	-0.5	0.121
Mountain West ACO	-0.2	0.582	-0.2	0.383	0.1	0.655
High Sierras-Northern Plains ACO	0.4	0.165	-0.3	0.194	0.1	0.714
Aledade Kansas ACO	0.1	0.630	0.2	0.316	0.3	0.220
Aledade West Virginia ACO	-1.0	0.000	-0.6	0.011	-0.4	0.131
Heartland Physicians ACO	-0.4	0.222	-0.2	0.568	-1.0	0.005
Alliance ACO	0.0	0.975	-0.4	0.035	-0.4	0.061
Kentucky Primary Care Alliance Region 2	-0.3	0.357	-0.1	0.531	0.0	0.855
Aledade Mississippi ACO	-0.3	0.078	-0.1	0.263	-0.2	0.090
Tar River Health Alliance	-0.2	0.552	0.1	0.725	0.5	0.034
Affiliated ACO	0.0	0.934	0.3	0.424	-0.4	0.254
California ACO	0.2	0.287	-0.2	0.104	0.2	0.114
San Juan ACO	-1.1	0.000	-0.1	0.661	-0.1	0.671
Rocky Mountain ACO	-0.2	0.220	-0.1	0.599	0.0	0.919
MissouriHealth+	0.1	0.581	-0.2	0.217	0.1	0.489
Beacon Rural Health	0.2	0.649	0.3	0.354	0.4	0.252

Note: Represent the estimated impact of AIM on the performance measure listed in each column based on the DID model described in Chapter 2. Statistical significance at the 5 percent level are shaded. The claims-based measures are described in Appendix 1F.

Appendix 3A. Interview Guides

We developed semi-structured interview guides for each round of interviews with ACO representatives. The guides were reviewed and revised over multiple discussions with the qualitative research team and CMS and pilot tested with two AIM ACOs prior to finalizing.

For the first round of interviews, the team integrated themes gathered from our review of Shared Savings Program and AIM application materials into discussion guides. The guides were designed to collect information about AIM ACOs' reasons and goals for participating, how they have applied their pre-paid shared savings, and their structure and activities as a result of participating in the AIM model.

The second round of interviews revisited topics from the first round and explored interviewees' reflections on their participation in AIM as well as AIM's effect on their decision to continue participating in the Shared Savings Program and assuming two-sided financial risk.

First-round interview guide:

Reasons for Participating in AIM Model

1. Why did your organization decide to become an AIM ACO?
2. Does a management company play any role in organizing or operating the ACO?
3. Do you plan to continue in the Medicare Shared Savings Program when AIM concludes?

Application of Pre-paid Shared Savings

4. How have you used your CMS AIM funds to date? What are the most significant investments that you made?
5. Did sustainability of the intervention(s) beyond the AIM model factor in to your decision-making about what investments to make with AIM funds?
6. Have you encountered any barriers or problems with the way you decided to allocate AIM funds?

Key Features of the ACO

7. Were the relationships between providers participating in the ACO established prior to applying to AIM? If not, how did you get together to apply to AIM?
8. To what extent does the ACO involve physicians in decisions to use pre-paid shared savings funds?
9. To what extent do participating providers exchange information about ACO-assigned beneficiaries, share clinical practice guidelines, and share other resources (e.g., IT support, staff, etc.) with each other?
10. Does your ACO have a relationship with one or more hospitals (outside of your core provider network)? Were these relationships established prior to the AIM or in response to participating in the AIM?
11. Do your ACO providers have partnerships with other providers outside of the ACO (e.g., specialists, home health, SNF, hospice)?

Care Management

12. What care management intervention(s) have you implemented or enhanced since the start of AIM and that serve AIM ACO beneficiaries?
13. How did you determine what care management programs/services to implement?

14. When was this program/service implemented?
15. What criteria are used to determine who would benefit from this care management program/service (e.g., all diabetics or only diabetics with HbA1c >9, any patient with an inpatient admission in the last 6 months)?
16. How do you identify beneficiaries who could benefit from this care management program [i.e. what information is used]? (e.g., analysis of utilization patterns in claims, presence of specific conditions in the EHR, risk stratification and predictive modeling using clinical data and claims, provider referral, etc.)?
17. If you have care managers for this program/service, do the care managers operate from the ACO-participating providers' offices? Do care managers meet with beneficiaries face-to-face?
18. To what extent are you able to monitor whether or not the program/service is achieving the intended results? What measures do you use?
19. What changes, if any, do you anticipate making to this program/service over time and why? (e.g., expanding the number of beneficiaries served, adding staff, etc.)

Second-round interview guide

Introduction

1. When we spoke in the fall of 2016, we understood the organization had [count and type of providers]. Since we last spoke, has your ACO made any changes to its roster of participating providers?
2. When we last spoke in the fall of 2016, we learned that your organization [had/did not have] relationships with other entities outside of the ACO, like specialists, home health agencies, SNFs, and hospices. Have there been any changes in these relationships since we last spoke? What new relationships with external providers has your ACO formed since we last spoke?

Reasons for AIM Participation

3. When we last spoke, we heard that your goals for AIM were [*goals cited*]. To what extent has participation allowed you to accomplish what you intended? Why or why not?

Reflecting on Allocation of Pre-paid Shared Savings

4. When we last spoke, we learned that you were allocating AIM funds to: [refer to introductory interview response and expense report information for key areas of AIM fund allocation] How would you describe your progress in implementing these investments? To what extent, if at all, did that allocation change over the course of your participation in AIM? What did AIM funding allow you to invest in that you would not have otherwise?
5. When we first spoke, in the fall of 2016, we learned that your ACO's care management activities were [what they described], and that you were focusing on [patient types described]. We also understood that care managers were [meeting with patients face to face, contacting patients by phone, both]. Is that an accurate description today? How has your care management approach changed over the course of AIM participation in terms of activities, goals, priority populations, or how care managers interact with patients? Why have these things changed?

6. [If the ACO has a management company] Are you still working with [insert name of management company]? What services is the management company currently providing?

Organizational Self-assessment

7. If you were able to go back to the inception of your ACO, what, if anything, would your organization do differently? Why?
8. If you were able to go back to the inception of your ACO, what would your organization do the same? Why?
9. When you began participating in AIM, do you think your organization had an accurate understanding of the AIM ACO model? If not, how so?
10. What would be your recommendation(s) for how the AIM ACO model could be improved for a future cohort of AIM or another pre-paid shared savings ACO model?

Plans for Continued SSP Participation

11. How, if at all, did participation in AIM affect your decision about renewing your participation in SSP? [Question applies to AIMS that started SSP in 2014²⁴ and 2015²⁵.]
12. How, if at all, has your participation in AIM affected your thinking about renewing participation in SSP once AIM ends? [Question 13 applies to AIMS that started SSP in 2016²⁶.]
13. Which, if any, interventions or changes your organization implemented during AIM will you maintain when AIM ends? Why?
14. Which, if any, interventions or changes your organization implemented during AIM will you discontinue when AIM ends? Why?
15. *[If the AIM plans to continue in SSP and has a management company]* Will you continue working with a management company once AIM ends?

²⁴ SSP 2014 starters: Sunshine ACO-A2011; PremierMD ACO-A2084

²⁵ SSP 2015 starters: Akira Health LA-A2634; Carolina Medical Home Network-A2596; IL Rural Community Care Organization-A2619; Reid ACO/River Valley Rural ACO-A2622; Texas Rural ACO-A2662

²⁶ SSP 2016 starters: all other AIM ACOs not mentioned in earlier footnotes

Appendix 3B. Approach to AIM ACO Interviews and Analysis

Outreach and Interviews

The team conducted outreach to AIM participants and scheduled the interviews. For the initial outreach in round one, the interview team drew contact names and information from CMS's Salesforce database and contacted each AIM ACO by email and/or telephone to schedule a 90- or 60-minute interview. During the outreach and scheduling process, we explained the topics to be covered and asked the AIM ACO to make appropriate staff available for the interviews. We requested that key personnel from an ACO practice(s) participate in the interview so that the staff perspectives from at least one of the ACO practices was represented. For the second round of interviews, the team used our participant contacts from round one of interviews for outreach and scheduling.

Once the interviews were scheduled, each AIM ACO was assigned an interview team consisting of a lead interviewer and a note-taker, both of whom were trained on the discussion guide and outreach materials over multiple sessions. Upon execution, interviews were audio recorded and teams produced transcript-style notes for each interview in a note-taking template that mirrored the discussion guide—the template helped to reinforce consistency in data collection across the AIM ACOs and also to keep the gathered information well-organized.

Analysis

After the completion of the interviews, the teams summarized notes by discussion guide topic in a standardized debrief document and retained raw notes and recordings for back-up purposes. Debrief documents were then entered into qualitative data analysis software (Dedoose). The software allowed the team to apply codes from a code tree that corresponded to the interview topics. Before finalizing code definitions, the team tested the code tree multiple times across several debrief documents, identifying and refining any codes that yielded inconsistent applications (low interrater reliability) or that required further disaggregation (or consolidation) to best serve the interview content. Once all debriefs were coded, the coded excerpts were exported and summarized by topic by three senior researchers and a research assistant. To ensure accuracy, the summaries and quotes were also reviewed by the original interview teams. The Abt team provided a written summary of results for each round of interviews to CMS. The first round summary was completed in April 2017, and the second round summary was completed in April 2018. These summaries were combined and supplemented with the original notes and debriefs for this report.

Appendix 3C. AIM ACO Web Survey Instrument

Purpose

The AIM ACO Web survey gathered information on AIM ACOs' sustainability of AIM-funded activities since the completion of AIM funds, overall perceptions of AIM, and continued participation and risk-taking in the Shared Savings Program. For comparison, non-AIM SSP ACOs were also surveyed on their perceptions of the Shared Savings Program, continued participation, and increased risk taking.²⁷

Outreach

We surveyed 45 AIM ACOs and 101 non-AIM SSP ACOs. The surveyed non-AIM SSP ACOs consisted of 55 ACOs beginning the Shared Savings Program in 2016 and 46 ACOs beginning the Shared Savings Program between 2013 and 2015.²⁸ The survey was fielded electronically from September 10, 2018, to October 26, 2018. ACO contacts received unique survey links for their specific organizations. The ACOs were sent reminders several times during the survey fielding window to complete the survey.

The AIM ACOs were provided one of three different versions of the survey depending on when they began AIM (2015 or 2016) and if they were Test 1 (new ACOs) or Test 2 (existing ACOs). The surveys were as identical as possible – differences existed solely to accommodate the language related to AIM and Shared Savings Program start dates. The AIM Test 1 ACO version is provided below.

Completion Rates

Of the 45 AIM ACOs, 38 (84.4 percent) completed the survey, three AIM ACOs (6.7 percent) initiated but did not complete the survey, and four AIM ACOs (8.9 percent) did not begin the survey (**Exhibit 3C-1**). Of the four Test 2 AIM ACOs, three completed the survey. For non-AIM ACOs, 46 of the 101 ACOs completed the survey (45.5 percent); there was one incomplete survey and 54 non-responders.

Exhibit 3C-1. ACO Web Survey Completion Status

	Total # Surveyed	# Completed	# Incomplete	# Not Started	% Complete
All AIM ACOs	45	38	3	4	84.4%
AIM Test 1	36	35	3	3	97.2%
AIM Test 2	4	3	0	1	75.0%
Non-AIM ACOs	101	46	1	54	45.5%

In this report, we draw from AIM ACO survey responses related to sustaining ACO activities, perceptions of AIM, and future plans (**Chapter 3** and **Chapter 6**).

²⁷ The AIM evaluation also surveyed non-AIM SSP ACOs in a first round survey in the second half of 2016. During the same period, AIM ACO representatives were interviewed for the first time.

²⁸ We selected all non-AIM SSP ACOs starting SSP in 2016. Among SSP ACOs starting 2015, we selected a subset of ACOs based on their similarity to AIM ACOs in the same year across three dimensions: (i) size of the ACO measured by the number of assigned beneficiaries; (ii) rurality of the ACO measured by the percentage of assigned beneficiaries residing in ZIP codes with RUCAs scores of 4 or more; and (iii) percentage of assigned beneficiaries residing in ZIP codes designated as Health Professional Shortage Areas (HPSAs). Among SSP ACOs starting in 2013 and 2014, we selected a subset of ACOs based on their similarity to AIM ACOs beginning SSP in the same year in terms of the number of assigned beneficiaries only.

AIM Test 1 ACO Survey

1. About This Survey

The Centers for Medicare & Medicaid Services (CMS) through the Center for Medicare and Medicaid Innovation (CMMI) contracted with Abt Associates and partners L&M Policy Research and Insight Policy Research to design and conduct an evaluation of the Shared Savings Program (SSP) Accountable Care Organization (ACO) Investment Model (AIM). One component of the evaluation is a Web survey. Your responses to this survey are vital to understanding if AIM achieved its goals. ***Your responses will not be attributed to any person or ACO and will be used solely for internal research purposes.***

You are being asked to complete this survey because your organization received AIM funds from January 1, 2016 to December 31, 2017. Under the contractual terms of your AIM ACO participation agreement (Section VI. Participation in Evaluation and Shared Learning Activities), your ACO's participation in evaluation activities is required. We understand participation in the survey inherently imposes a burden on you and your ACO. The survey consists of 17 questions and was designed to take less than 20 minutes to complete. In return for your participation, you will receive aggregated results across all respondents for each question.

WHO SHOULD COMPLETE THIS SURVEY: One or more members of ACO leadership or staff who are knowledgeable about the topics listed below. Survey questions relate to your ACO's experiences during and following participation in AIM. We understand that there may be variation within an ACO's participating organizations – please answer to the best of your ability based on your knowledge of the ACO and your organization.

1. Key features of the ACO's organizational structure, including the use of a management company.
2. Familiarity with the use of AIM funds and other investments made by the ACO.
3. Decision-making regarding applying to AIM, renewal of Shared Savings Program participation and financial risk track.

The survey questions are available for download [here](#) as a reference; please respond to all questions via the Web link provided in the email.

INSTRUCTIONS: Please click the "Next" button below to begin the survey. This Web link is unique to your ACO, so please do not share it outside of the ACO. There are 17 questions; some of them have follow-up questions depending on the response. Complete each of the response fields and then click "Submit" on the final page of the survey. Responses are saved by pressing the "Next" button on the bottom of each survey page. You may go back and change saved responses if you have not clicked "Submit." **Once you click "Submit," your survey will be considered final, and you will not be able to change any responses.**

The survey will be available for completion until midnight Friday, September 28, 2018.

If you experience any technical difficulties, please contact Betty_Fout@abtassoc.com or Ariana_Bengtsson@abtassoc.com. Thank you in advance for your time to complete this survey.

OPENING QUESTIONS ABOUT WHO IS COMPLETING THE SURVEY

1. **What is the best description of your role in the ACO? If multiple people are completing this survey, indicate all respondents' roles:**
 - ACO executive
 - ACO administrator
 - ACO governing body member
 - ACO medical director
 - ACO's health care professional responsible for the ACO's quality assurance and improvement program
 - ACO care manager
 - Other, please specify [OPEN]

2. **Is anyone who assisted in completing this survey employed by a management company?**
 - No
 - Yes

ACO MANAGEMENT COMPANY USE

3. **Is your ACO currently working with a management company?**
 - No
 - If no, did your ACO ever work with a management company?
 - No
 - Yes
 - Yes
 - What is the name of the management company? _____
 - Which services does the management company currently provide to your ACO? (check all that apply)
 - Training for care coordinators or care managers
 - Training for providers
 - Guidance on effective care management programs
 - Analysis of patient data for targeting care management programs
 - Analysis of patient data for measuring ACO or provider performance
 - Assistance with quality reporting
 - 24-hour nurse hotline
 - Compliance/legal guidance
 - Guidance on developing patient-care workflows and best practices
 - Convening ACO workgroups, boards, or committees
 - Facilitating cross-ACO collaboration
 - Facilitating within-ACO collaboration
 - Other, please specify [Open]

SUSTAINABILITY OF AIM-FUNDED INVESTMENTS

4. **This question relates to your ACO's spending during and after receipt of AIM funds. Please indicate whether your ACO expended AIM funds in the following areas of investment and if so, whether your ACO plans to continue spending in these areas. Check all investment areas that apply.**
 - Clinical staff
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?

- Lower investment
- Same investment
- Higher investment

Please explain (optional): [Open]

- Care management staff (i.e., hiring, expanding hours of, or training)
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

- EHR system purchase/upgrade
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

- Care management software
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

- Risk analysis/claims analysis software
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

- Risk analysis/claims analysis consultant/services
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

- Rent/office space
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

- Hiring clinical management/leadership staff
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment

- Same investment
- Higher investment

Please explain (optional): [Open]

- Hiring administrative management/leadership staff
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

- Initiating new patient health programs (e.g., smoking cessation, telehealth services, exercise programs, etc.)
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

- Education & training (includes provider education, travel to workshops/conferences, etc.)
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

- Quality measure and performance feedback reporting
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

- Other [OPEN]
 - What level of investment does your ACO plan to spend in this area after expending all its AIM funds?
 - Lower investment
 - Same investment
 - Higher investment

Please explain (optional): [Open]

5. What other funding sources have you used (or plan to use) to sustain investments that were paid for using AIM funds? Check all that apply.

- Shared savings from SSP
- Increase in revenue from annual wellness visits, chronic care management services, or transitional care management services
- Increase in revenue from other services
- Funding from third-party private payers with which you contract
- ACO-participating provider/practice investment
- Other non-ACO provider investment
- Grant funding

- Other, please specify [OPEN]
- Not applicable: the ACO has not sustained any AIM-funded investments

6. Since receipt of AIM payments ended, do you use Medicare claims and/or quality data for any of the following? Check all that apply.

- Identify patients for care management services
- Determine the focus of your population health or care management programs
- Provide feedback to providers on their performance
- Provide information to partners, other payers, potential partners, or potential payers about the ACO's performance
- Provide information to other providers who care for ACO members about their quality or utilization patterns
- Identify possible referral partners (e.g., skilled nursing facilities, home health agencies, specialists) based on quality or utilization patterns
- Other, please specify [OPEN]

FUTURE PLANS

7. Before CMS released its proposed changes to the Shared Savings Program in early August 2018, did your ACO plan to renew its participation agreement at the conclusion of the current agreement period?

- No
 - Please explain [OPEN]
- Yes
 - Has participation in AIM contributed to your ACO's decision to continue participation in the Shared Savings Program?
 - No
 - Yes
 - Does your ACO plan to move to a two-sided financial risk track?
 - No
 - Yes
 - Currently in Track 1+, Track 2, or Track 3 (downside risk)
 - Do you feel that AIM participation contributed to your ACO's decision to move to a two-sided financial risk track?
 - No
 - Yes

Please explain (optional) [OPEN]

- Undecided
 - Please explain [OPEN]

8. Since the start of AIM, have any providers in your ACO begun any other CMS or non-CMS Alternative Payment Models (APM)?

- No
- Is your ACO interested in considering participation in other APMs in the future?
 - Yes
 - No
 - Not sure
- Yes
- Select which payment model(s) (check all that apply):
 - Transforming Clinical Practice Improvement (TCPI)
 - Comprehensive Primary Care Plus (CPC+)
 - Oncology Care Model
 - Bundled Payment for Care Improvement
 - Comprehensive Care for Joint Replacement (CJR) Payment Model
 - State/Medicaid ACO program
 - State Innovation Model (SIM) grant
 - Commercial insurer-paid quality improvement program
 - Commercial insurer ACO programs (or contracts)
 - Other, please specify [OPEN]
 - Did your participation in the Shared Savings Program and AIM influence your decision to participate in other APMs?
 - No
 - Yes

Please explain (optional): [Open]

FEEDBACK ON AIM PARTICIPATION AND VALUE

9. What were your ACO's original motivations for participating in the Shared Savings Program? (check all that apply)

- Enhance strategic position in marketplace
- Align with other payers
- Prepare for increases in value-based contracting
- Catalyst for change in organization
- Invest in care management
- Improve organization of providers
- Pressure from market competitors
- Potential to generate and earn shared savings
- Other, please explain [OPEN]

10. Do you have any suggestions for how CMS can better support learning by ACOs (for example, by sharing information on ACOs' best practices about a particular topic)?

- No
- Yes
 - If yes, please provide suggestions here:": *Free text field to explain answer (not optional)*

11. Do you feel that your organization has made improvements in coordinating patient care or generally increased the quality of care provided to patients since AIM started?

- No
- Yes

Please explain (optional): *Optional free text field to explain answer*

12. Do you feel that provider engagement in quality improvement and care coordination has increased since AIM started?

- No
- Yes

Please explain (optional): *Optional free text field to explain answer*

13. Do you feel that patients' engagement in their health care decision-making has increased since AIM started?

- No
- Yes

Please explain (optional): *Optional free text field to explain answer*

14. How would you characterize the level of AIM funds that your ACO received?

- Insufficient level of funds
- Appropriate level of funds
- Excessive level of funds

Please explain (optional): *Optional free text field to explain answer*

15. Would your organization have joined the Medicare Shared Savings Program as an ACO had AIM funding not been available?

- No
- Yes

Please explain (optional): *Optional free text field to explain answer*

16. Did your ACO earn shared savings in any year?

- No
- Yes

- Do you believe the availability of AIM funds contributed to your ACO earning shared savings?

- No
- Yes

Please explain (optional): *Optional free text field to explain answer*

17. Knowing what you know now, would your ACO decide to participate in the Shared Savings Program and/or AIM if you could do it again?

- Participate in both
- Participate in the Shared Savings Program only, but not AIM
- Participate in neither

Please explain (optional): *Optional free text field to explain answer*

Once you click "Submit," your survey will be considered final, and you will not be able to change any responses. Thank you for completing this survey!

Appendix 3D. AIM ACOs’ Management Companies and Composition

ACO Name	First Interview		Second Interview	
	Management Company Name	ACO Composition	Management Company Name	ACO Composition
AIM Test 1				
Carolina Medical Home Network ACO	Independent	• 6 FQHCs	Independent	• 8 FQHCs • 139 participating providers
Illinois Rural Community Care Organization	Illinois Critical Access Hospital Network	• 35 RHCs, 21 CAHs • 14 physician practices • 1 rural community hospital	Illinois Critical Access Hospital Network	• 21 CAHs • 1 rural community hospital • 35 RHCs • 14 physician practices
Reid ACO	Caravan Health	• Multi-specialty outpatient providers	Caravan Health	Multi-specialty outpatient providers
Akira Health of Los Angeles	Akira Health Management Services Organization	• 25 primary care physicians • 1 specialist	Akira Health Management Services Organization	• 100+ independent physicians, mostly primary care
Texas Rural ACO	Caravan Health	• 5 hospitals • 1 physician group	Caravan Health	• 5 hospitals, one physician group with multiple providers and clinics
Access Care Oklahoma	Independent	• 29 primary care practices • 4 hospitals • 1 urgent care center • 2 RHCs • 1 HHA • 1 hospice	Independent	• 239 providers made up of RHCs, CAHs, specialty physicians, hospitals, an urgent care center, and ancillary service providers
Citrus County ACO	Healthcare Development Partners of America	• 28 primary care providers	Healthcare Development Partners of America	• 14 practices • 28 providers, all PCPs
AmpliPHY of Texas ACO	AmpliPHY Physician Services	• 26 independent practices	AmpliPHY Physician Services	• 26 practices (solo and group) • 74 participating providers
AmpliPHY of Kentucky ACO	AmpliPHY Physician Services	• 6 solo-practitioner practices • 1 group practice	Aledade, Inc.	• 9 independent practices • 18 participating providers
Winding River ACO	Caravan Health	• 9 hospitals • 24 affiliated clinics	Caravan Health	• Includes 9 hospitals • 24 clinics • Added a couple of providers including a facility in TX that expanded the geographic reach • 213 Physicians (74 primary care physicians and 95 mid-levels)

ACO Name	First Interview		Second Interview	
	Management Company Name	ACO Composition	Management Company Name	ACO Composition
Prairie Hills Care Organization	Caravan Health	<ul style="list-style-type: none"> • 4 hospitals • 11 affiliated clinics • 3 FQHCs 	Caravan Health	<ul style="list-style-type: none"> • 4 hospitals • 14 affiliated clinics, 3 of which are FQHCs • 394 participating providers
Great Plains Care Organization	Caravan Health	<ul style="list-style-type: none"> • 2 hospitals • affiliated clinics 	Caravan Health	<ul style="list-style-type: none"> • 5 hospitals • 8 clinics, none of which are FQHCs • 198 participating providers
Mountain Prairie ACO	Caravan Health	<ul style="list-style-type: none"> • 16 hospitals 	Caravan Health	<ul style="list-style-type: none"> • 10 rural hospitals • 53 participating PCPs • 52 participating NPs and PAs
Iowa Rural ACO	Caravan Health	<ul style="list-style-type: none"> • 7 hospitals • 29 affiliated clinics 	Caravan Health	<ul style="list-style-type: none"> • 7 hospitals, six of which are CAHs • 29 clinics
Illinois Rural ACO	Caravan Health	<ul style="list-style-type: none"> • 6 hospitals • 33 affiliated clinics 	Caravan Health	<ul style="list-style-type: none"> • 6 hospitals with approximately 33 associated clinics • Several physician practices
Indiana Rural ACO II	Caravan Health	<ul style="list-style-type: none"> • 2 hospitals • 14 RHCs 	Caravan Health	<ul style="list-style-type: none"> • 2 hospitals • 2-3 RHCs • Several physician practices
Indiana Rural ACO	Caravan Health	<ul style="list-style-type: none"> • 7 hospitals • 49 related clinics 	Caravan Health	<ul style="list-style-type: none"> • 5 hospitals • About 40 related clinics
Michigan Rural ACO	Caravan Health	<ul style="list-style-type: none"> • Several hospitals (community and CAH) • 1 FQHC 	Caravan Health	<ul style="list-style-type: none"> • 9 hospitals • 66 affiliated clinics
Southern Michigan Rural ACO	Caravan Health	<ul style="list-style-type: none"> • 8 hospitals • 22 clinics (mostly RHCs, some FQHCs) 	Caravan Health	<ul style="list-style-type: none"> • 9 hospitals • 22 clinics (mostly RHCs, no FQHCs)
New Hampshire Rural ACO	Caravan Health	<ul style="list-style-type: none"> • 6 hospitals • 3 FQHCs 	Caravan Health	<ul style="list-style-type: none"> • 6 rural health systems with 6 hospitals and 26 affiliated clinics including 3 FQHCs
Ohio River Basin ACO	Caravan Health	<ul style="list-style-type: none"> • 11 hospitals • 18 clinics 	Caravan Health	<ul style="list-style-type: none"> • 9 hospitals and approximately 15 affiliated clinics • 1 home health agency

ACO Name	First Interview		Second Interview	
	Management Company Name	ACO Composition	Management Company Name	ACO Composition
Magnolia-Evergreen ACO	Caravan Health	<ul style="list-style-type: none"> • 8 rural health systems comprised of 3 hospitals; 31 affiliated clinics 	Caravan Health	<ul style="list-style-type: none"> • 8 rural health systems, consisting of 3 hospitals and approximately 31 affiliated clinics • 481 participating providers
North Mississippi Connected Care Alliance	Caravan Health	<ul style="list-style-type: none"> • 5 hospitals • 23 clinics 	Caravan Health	<ul style="list-style-type: none"> • 5 hospitals • 23 clinics including some rural health clinics but no FQHCs • 223 participating providers
Deep South Regional ACO	Caravan Health	<ul style="list-style-type: none"> • 9 hospitals • 70 affiliated clinics 	Caravan Health	<ul style="list-style-type: none"> • RHCs, FQHCs, physician practices, CAHs, IPPS acute care hospitals • 9 hospitals • Over 70 affiliated clinics
Minnesota Rural ACO	Caravan Health	<ul style="list-style-type: none"> • 4 hospitals • 13 clinics 	Caravan Health	<ul style="list-style-type: none"> • 4 hospitals • 3 CAHs • 4 RHCs • 26 FFS clinics
Oregon-Indiana ACO	Caravan Health	<ul style="list-style-type: none"> • 4 hospitals • affiliated clinics 	Caravan Health	<ul style="list-style-type: none"> • 4 hospitals with associated clinics • Several physician practices
Mountain West ACO	Caravan Health	<ul style="list-style-type: none"> • 13 hospitals • 40 affiliated health clinics 	Caravan Health	<ul style="list-style-type: none"> • 13 rural health systems with 13 hospitals and 40 affiliated clinics
High Sierras-Northern Plains ACO	Caravan Health	<ul style="list-style-type: none"> • 11 hospitals • 26 affiliated clinics (at least one FQHC) 	Caravan Health	<ul style="list-style-type: none"> • 5 CAHs and at least one FQHC in ND • 4 hospitals and a physician practice clinic in CA • One physician practice in AZ
Aledade Kansas ACO	Aledade, Inc.	<ul style="list-style-type: none"> • 12 independent primary care practices 	Aledade, Inc.	<ul style="list-style-type: none"> • 15 independent and primary care clinics • 74 participating providers
Aledade West Virginia ACO	Aledade, Inc.	<ul style="list-style-type: none"> • 11 independent primary care practices 	Aledade, Inc.	<ul style="list-style-type: none"> • 15 independent primary care practices

ACO Name	First Interview		Second Interview	
	Management Company Name	ACO Composition	Management Company Name	ACO Composition
Heartland Physicians ACO	MedLink Advantage	<ul style="list-style-type: none"> • 1 CAH • 1 multi-specialty group practice • 4 independent primary care practices 	MedLink Advantage	<ul style="list-style-type: none"> • Physician practices, CAHs, FQHCs • Added multi-specialty practice, a few primary care practices, 2 family physician practices, and 1 two-physician practice. The core practices remained relatively the same. • 120 participating providers
Alliance ACO	Innovista Health Solutions	<ul style="list-style-type: none"> • 15 primary care practices 	Innovista Health Solutions	<ul style="list-style-type: none"> • 18 independent primary care practices • 34 participating providers
Kentucky Primary Care Alliance Region 2	Precision Healthcare Delivery	<ul style="list-style-type: none"> • 11 entities: FQHCs; RHCs; licensed primary care centers 	Precision Healthcare Delivery	<ul style="list-style-type: none"> • 17-18 FQHCs, rural health clinics, or licensed primary care centers • 311 participating providers
Aledade Mississippi ACO	Aledade, Inc.	<ul style="list-style-type: none"> • 14 independent primary care practices 	Aledade, Inc.	<ul style="list-style-type: none"> • 23 independent physician practices • 167 participating providers
Tar River Health Alliance	Independent	<ul style="list-style-type: none"> • Multi-specialty group practice with 39 specialists, 30 primary care providers 	Independent	<ul style="list-style-type: none"> • Multi-specialty practice • 69 participating providers: 30 PCPs and the rest specialists, including dermatology, gastroenterology, endocrinology, neurology, nephrology, allergy, and surgery. • Added Rocky Mount clinic in 2017, a family practice with 10 PCPs

ACO Name	First Interview		Second Interview	
	Management Company Name	ACO Composition	Management Company Name	ACO Composition
Affiliated ACO	Independent	<ul style="list-style-type: none"> Multi-specialty group health network with 110 physicians, 60 advanced practice providers 	Independent	<ul style="list-style-type: none"> All of the ACO's participating providers are part of Affiliated Community Medical Centers, a private, physician-owned, multi-specialty health network. Group consists of approximately 170 providers (consisting of physicians and advance practice providers) across a number of specialties. Main location is a rural facility in MN, and there are 11 other facilities in west-central MN.
California ACO	Independent	<ul style="list-style-type: none"> RHCs; FQHCs Solo and group physician practices (16 primary care, 2 specialty) 	Independent	<ul style="list-style-type: none"> RHCs FQHCs/Indian Health Programs Solo and group practices, both primary care and multispecialty practices 177 providers (added 23 new practices in 2017)
San Juan ACO	Community Care Alliance	<ul style="list-style-type: none"> 15 entities: RHCs; CAHs; FQHCs; independent primary care practices 	Community Care Alliance	<ul style="list-style-type: none"> Primarily primary care with some CAHs, RHCs, FQHCs, Independent practices, and small acute care hospitals. 200 participating providers
Rocky Mountain ACO	Community Care Alliance	<ul style="list-style-type: none"> 12 entities: RHCs; CAHs; FQHCs; independent primary care practices 	Community Care Alliance	<ul style="list-style-type: none"> Primarily primary care with some CAHs, RHCs, FQHCs, Independent practices, and small acute care hospitals. 398 participating providers
MissouriHealth+	Missouri Primary Care Association	<ul style="list-style-type: none"> 14 FQHCs 	Missouri Primary Care Association	<ul style="list-style-type: none"> 19 FQHCs
Beacon Rural Health	Independent	<ul style="list-style-type: none"> 5 CAHs 	Independent	<ul style="list-style-type: none"> 5 CAHs throughout ME, two of which are located in economically depressed areas of the state 360 participating providers and suppliers

ACO Name	First Interview		Second Interview	
	Management Company Name	ACO Composition	Management Company Name	ACO Composition
AIM Test 2				
The Premier Healthcare Network	Independent	<ul style="list-style-type: none"> • 44 primary care providers • 5 specialists 	Independent	<ul style="list-style-type: none"> • 48 practices, all of whom are members of one IPA
Akira Health	Akira Health Management Services Organization	<ul style="list-style-type: none"> • 30-40 primary care physicians 	Akira Health Management Services Organization	<ul style="list-style-type: none"> • 30 independent physicians
Sunshine ACO	Independent	<ul style="list-style-type: none"> • 11 primary care providers 	Independent	<ul style="list-style-type: none"> • 11 independent, solo PCP practices • 1 group primary care practice with 2 providers and 6-8 mid-level practitioners
PremierMD ACO	Independent	<ul style="list-style-type: none"> • 83 independent practices • 6 HHAs or hospices 	Genuine Health	<ul style="list-style-type: none"> • Approximately 200 physicians, most are primary care and specialists in solo practices • Since last year, the ACO excluded a lot of specialists from being participating providers; many are now contracted, preferred providers • ACO also has contracts with 36 SNF affiliates and some HH and hospice organizations • ACO still serves the same geographic region, but has a stronger presence in Miami now that they have been acquired by Miami-based Genuine Health Group

Source: AIM interviews conducted with ACO leadership in 2016 (first round) and 2018 (second round)

Appendix 3E. Subgroup Analysis

Methods

To estimate regression-adjusted subgroup impacts, we included all k subgroup measures within a domain simultaneously to estimate a difference-in-difference-in-difference (DDD) model. Such a regression simultaneously estimates a DID impact estimate for ACOs with a given characteristic, a DID impact without a given characteristic, and the difference between impacts within each subgroup:

$$DDD_k = DID_{1k} - DID_{0k}$$

DID_{1k} indicates the differential change in Medicare spending among AIM ACOs with the k^{th} characteristic (e.g., using a management company) relative to the comparison group within the ACOs' markets. DID_{0k} indicates the differential change in Medicare spending among AIM ACOs without the k^{th} characteristic (e.g., not using a management company) relative to the comparison group within the ACOs' markets. DDD_k is the estimated difference between the impact of AIM among AIM ACOs with the k^{th} characteristic and the impact of AIM among AIM ACOs without the k^{th} characteristic.

Parallel Trends Testing

Valid estimates for differences in impacts between subgroups required three sets of trends to hold in parallel throughout the baseline period. For a given subgroup, trends between AIM-assigned and comparison beneficiaries had to be parallel for both subsets within a given group. The difference in the differences between AIM and comparison beneficiaries between the two subsets of a given group must also remain parallel.

As an illustrative example, take our model with two subgroups of interest: beneficiaries with above-median total Medicare spending and those with below-median total spending. For our analysis of these groups to be valid, it must be the case that:

- 1.) AIM-assigned and comparison beneficiaries with above-median total spending must have parallel baseline trends
- 2.) AIM-assigned and comparison beneficiaries with below-median total spending must have parallel baseline trends.
- 3.) The difference between AIM and comparison beneficiaries in the above-median spending category must have a baseline trend parallel to the difference between AIM and comparison beneficiaries in the below-median spending category.

If (1) or (2) hold, then estimated differences between AIM-assigned and comparison beneficiaries are valid for that particular subgroup. However, if (1), (2), or (3) fail, then it is invalid to compare impacts within the two groups against one another.

Exhibit 3E-1 below shows the performance of each of our subgroups in the parallel trends tests for the baseline assigned to each performance year.

Exhibit 3E-1 : Parallel Trends Tests for Subgroup Regression Analyses

Year	Subgroup Characteristics	(1)	(2)	(3)
2016 (PY1)	ACO Formation			
	Management company	Passed	Passed	Passed
	Fewer than 6,500 assigned beneficiaries	Failed	Passed	Failed
	Partnered with hospital	Passed	Passed	Passed
	ACO Market Geography			
	High rurality (RUCA > 6)	Passed	Passed	Passed
	Disparate market	Passed	Passed	Passed
	Baseline Market Cost			
AIM baseline spending exceeds ACO's FFS market	Passed	Passed	Passed	
2017 (PY2)	ACO Formation			
	Management company	Passed	Passed	Passed
	Fewer than 6,500 assigned beneficiaries	Passed	Passed	Passed
	Partnered with hospital	Passed	Passed	Passed
	ACO Market Geography			
	High rurality (RUCA > 6)	Failed	Passed	Passed
	Disparate market	Passed	Failed	Failed
	Baseline Market Cost			
AIM baseline spending exceeds ACO's FFS market	Passed	Passed	Failed	

(1) Parallel trends between AIM and comparison beneficiaries in subgroup with a given characteristic

(2) Parallel trends between AIM and comparison beneficiaries in subgroup without a given characteristic

(3) Parallel trends between the differences between AIM and comparison beneficiaries in subgroup with a given characteristic, and the difference between AIM and comparison beneficiaries in subgroup without a given characteristic.

Results indicate that in PY2, all estimates in the ACO formation domain are valid. Impact estimates *within* a subgroup [(1) and (2)] are typically valid in the other two domains. However, differences in impacts *between* the two categories of a given subgroup are frequently not parallel in the baseline. This means we cannot say with certainty whether impacts in one subgroup category differed from impacts in the other subgroup category. Similarly, in PY1, estimates within and between subgroup categories all pass parallel trends, except when we categorize ACOs with more than and fewer than 6,500 assigned beneficiaries. Estimates for ACOs with fewer than 6,500 assigned beneficiaries failed parallel trends in the baseline. Likewise, the trends in impacts among ACOs with more than and fewer than 6,500 assigned beneficiaries were not parallel.

Sensitivity Test

Our preferred specification for subgroup analysis entailed simultaneously modeling outcomes for all subgroups within a domain. To test the sensitivity of our results to this approach, we re-estimated outcomes for each of our subgroups independent of the other subgroups in the same domain. For example, we estimated the impact of an ACO having a management company, without controlling for whether that ACO partnered with a hospital or had fewer than 6,500 assigned beneficiaries. We report results of this sensitivity analysis in **Exhibit 3E-2** below. Since the baseline market cost domain only had a single subgroup, results for that subgroup were already independent of all other subgroups, and we do not replicate those results here.

Exhibit 3E-2 : Independent Subgroup Regression Analyses

Year	Subgroup Characteristics	(1)	(2)	(3)
2017 (PY2)	ACO Formation			
	Management company	-43.49	-22.27	-21.22
	Fewer than 6,500 assigned beneficiaries	-28.18	-38.19	10.01
	Partnered with hospital	-35.65	-39.59	3.94
	ACO Market Geography			
	High rurality (RUCA > 6)	-52.17	-32.51	-19.66
	Non-contiguous market	-40.51	-27.65	-12.86 [#]
2016 (PY1)	ACO Formation			
	Management company	-33.21	-9.01	-24.20
	Fewer than 6,500 assigned beneficiaries	-34.42	-27.24	-7.18 [#]
	Partnered with hospital	-32.12	-22.20	-9.92
	ACO Market Geography			
	High rurality (RUCA > 6)	-23.14	-30.38	7.24
	Non-contiguous market	-29.82	-25.31	-4.51

(1) Parallel trends between AIM and comparison beneficiaries in subgroup with a given characteristic

(2) Parallel trends between AIM and comparison beneficiaries in subgroup without a given characteristic

(3) Parallel trends between the differences between AIM and comparison beneficiaries in subgroup with a given characteristic, and the difference between AIM and comparison beneficiaries in subgroup without a given characteristic.

[#]Indicates that baseline differences failed parallel trends and results may not be valid.

Point estimates from the sensitivity analysis were very similar to those from the preferred specification, and the simplified models used in the sensitivity analysis were less prone to failure of the parallel trends assumption, particularly in PY2. Findings from our sensitivity analysis thus support the conclusions in the main body of the report.

Appendix 3F. Annual Wellness Visit, Chronic Care Management, and Transitional Care Management Codes

Code	Description	Billing Restrictions	Providers Eligible to Bill	Patient Eligibility and Other Considerations
G0438	Annual Wellness Visit, Including Personal Prevention Plan Services (PPPS), First Visit	1) Billable only after 12 months from date of Medicare enrollment AND bene has not had IPPE or AWW within the past 12 months 2) If billed within first 12 months of Part B enrollment, will be denied per bene eligibility for IPPE (G0402, also known as the "Welcome to Medicare Visit")	MD, DO, PA, NP, CNS. Also: other medical professional including health educator, reg. dietician, nutritionist, or other licensed practitioner--under direct supervision of MD	No coinsurance or deductible; Goal: health promotion, disease detection, coordination of screening and prevention
G0439	Annual Wellness Visit, Including Personal Prevention Plan Services (PPPS), Subsequent Visit	1) Billable only after 12 months from date of Medicare enrollment AND bene has not had IPPE or AWW within the past 12 months 2) If billed within first 12 months of Part B enrollment, will be denied per bene eligibility for IPPE (G0402)	MD, DO, PA, NP, CNS. Also: other medical professional including health educator, reg. dietician, nutritionist, or other licensed practitioner--under direct supervision of MD	No coinsurance or deductible; Goal: health promotion, disease detection, coordination of screening and prevention
99490	Chronic Care Management, at least 20 minutes clinical staff time, directed by a physician or other qualified healthcare professional, per calendar month	Only 1 provider paid for CCM per calendar month; the provider can report either CCM or Complex CCM (not both) per calendar month; Assumes 15 minutes of work by billing provider per calendar month; CCM cannot be billed during same service period as: G0181/G0182 (Home care supervision/hospice) or 90951-90970 (ESRD services) or 99495/99496 (30-day transitional care management service period); CCM cannot be billed in the same calendar month as prolonged E/M services	MD, NP, PA, Certified Nurse Midwives	For patients with multiple (2 or more) chronic conditions expected to last 12 months or more
99487	Complex Chronic Care Management, moderate or high complexity medical decision making, 60+ minutes of clinical staff time directed by MD or other qualified healthcare professional, per calendar month	Only 1 provider paid for CCM per calendar month; the provider can report either CCM or Complex CCM (not both) per calendar month; CCM cannot be billed during same service period as: G0181/G0182 (Home care supervision/hospice) or 90951-90970 (ESRD services) or 99495/99496 (30-day transitional care management service period); CCM cannot be billed in the same calendar month as prolonged E/M services	MD, NP, PA, Certified Nurse Midwives	For patients with multiple (2 or more) chronic conditions expected to last 12 months or more

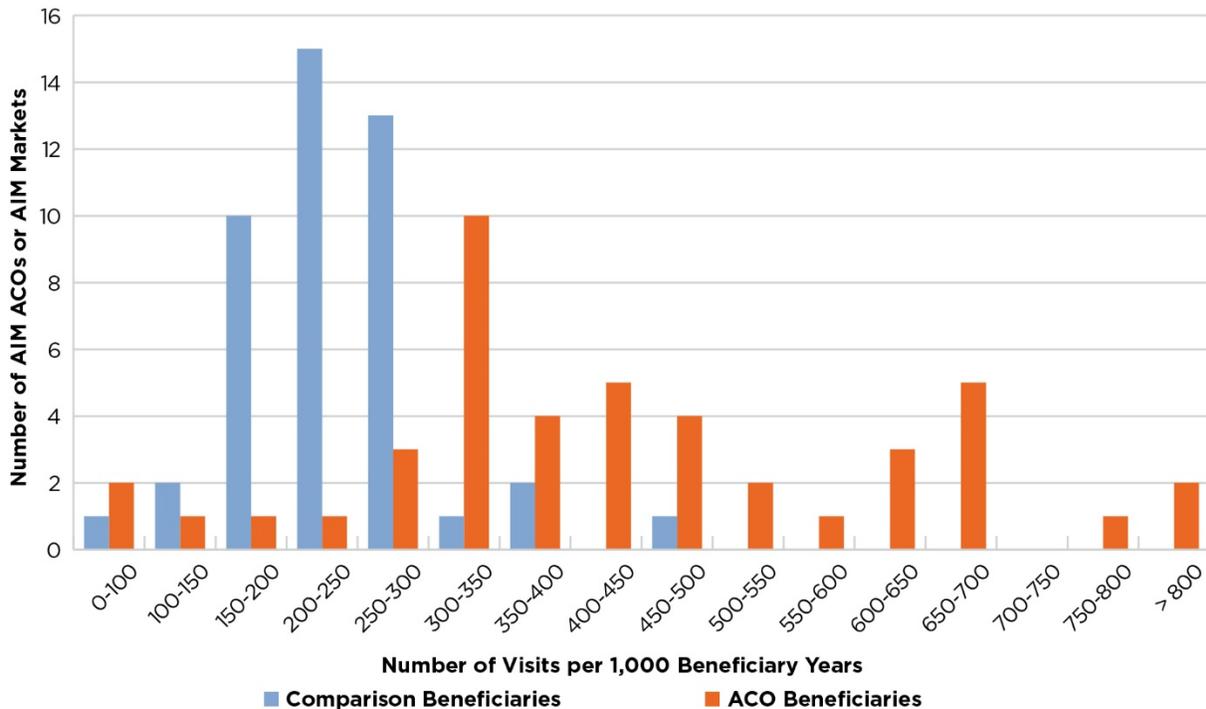
Code	Description	Billing Restrictions	Providers Eligible to Bill	Patient Eligibility and Other Considerations
99489	Complex Chronic Care Management, each additional 30 minutes of clinical staff time, per calendar month	Bill in conjunction with 99487, not alone; Only 1 provider paid for CCM per calendar month; the provider can report either CCM or Complex CCM (not both) per calendar month; CCM cannot be billed during same service period as: G0181/G0182 (care plan oversight in home care or hospice) or 90951-90970 (ESRD services) or 99495/99496 (30-day transitional care management service period--see below); CCM cannot be billed in the same calendar month as prolonged E/M services	MD, NP, PA, Certified Nurse Midwives (CNM)	For patients with multiple (2 or more) chronic conditions expected to last 12 months or more
G0506	Chronic Care Management Planning: Comprehensive assessment of and care planning by the physician or other qualified health care professional for patients requiring chronic care management services (billed separately from monthly care management services)	Code is for additional work of the billing provider in: 1) personally performing a face-to-face assessment; 2) personally performing CCM care planning. NOTE: CCMCP could be face-to-face and/or non face-to-face, but the time spent doing the CCMCP must not already be reflected in the CCM initiating visit itself or in the time spent during the monthly CCM (i.e., in CPT 99490, 99487, 99489); Billable once per beneficiary during the initiation of the patient into CCM	MD, NP, PA, Certified Nurse Midwives, Clinical Nurse Specialists and their clinical staff	Billable once per beneficiary during the initiation of the patient into CCM; Can be billed in addition to CCM services 99490, 99487, 99489
99495	Transitional Care Management w/moderate medical decision complexity, face-to-face visit within 14 days of discharge	Billable 30 days from discharge (begins date of discharge + 29 days); only 1 provider can bill TCM services; can be same as discharge provider but cannot be on the same day as discharge; E/M services billed separately as applicable; No TCM allowed within 30-day global procedure period for the same provider; not billable during same period as G0181/G0182 (care plan oversight services in home care or hospice) or 90951-909710 (ESRD services) or CCM	MD, NP, PA, CNS, CNM; Billable upon discharge from: IP Acute Care Hospital, IPF, LTC facility, SNF, IRF, hospital OP observation or partial hospitalization, partial hospitalization in community MH center	
99496	Transitional Care Management w/high medical decision complexity, face-to-face visit within 7 days of discharge	Billable 30 days from discharge (begins date of discharge + 29 days); only 1 provider can bill TCM services; can be same as discharge provider but cannot be on the same day as discharge; E/M services billed separately as applicable; No TCM allowed within 30-day global procedure period for the same provider; not billable during same period as G0181/G0182 (care plan oversight services in home care or hospice) or 90951-909710 (ESRD services) or CCM	See above	

Appendix 3G. Variation in Care Management Services

Use of AWW and care management services varied across ACOs. **Exhibit 3G-1** through **Exhibit 3G-3** use histograms to display the utilization of Annual Wellness Visits (AWV), Chronic Care Management (CCM), and Transitional Care Management (TCM) services per 1,000 beneficiary years for individual ACOs in 2017. Each bar represents the number of ACOs or ACO markets where service utilization for assigned or comparison beneficiaries falls within a given range.

Exhibit 3G-1 shows that comparison beneficiaries received between 150 and 300 AWW services per 1,000 beneficiary years in 2017 for the vast majority of AIM ACOs. The volume of AWW services was greater for assigned beneficiaries in 2017. For most AIM ACOs, assigned beneficiaries received more than 300 AWW services per 1,000 beneficiaries. Utilization of AWWs varied much more across AIM ACOs’ assigned beneficiaries than their comparison populations.

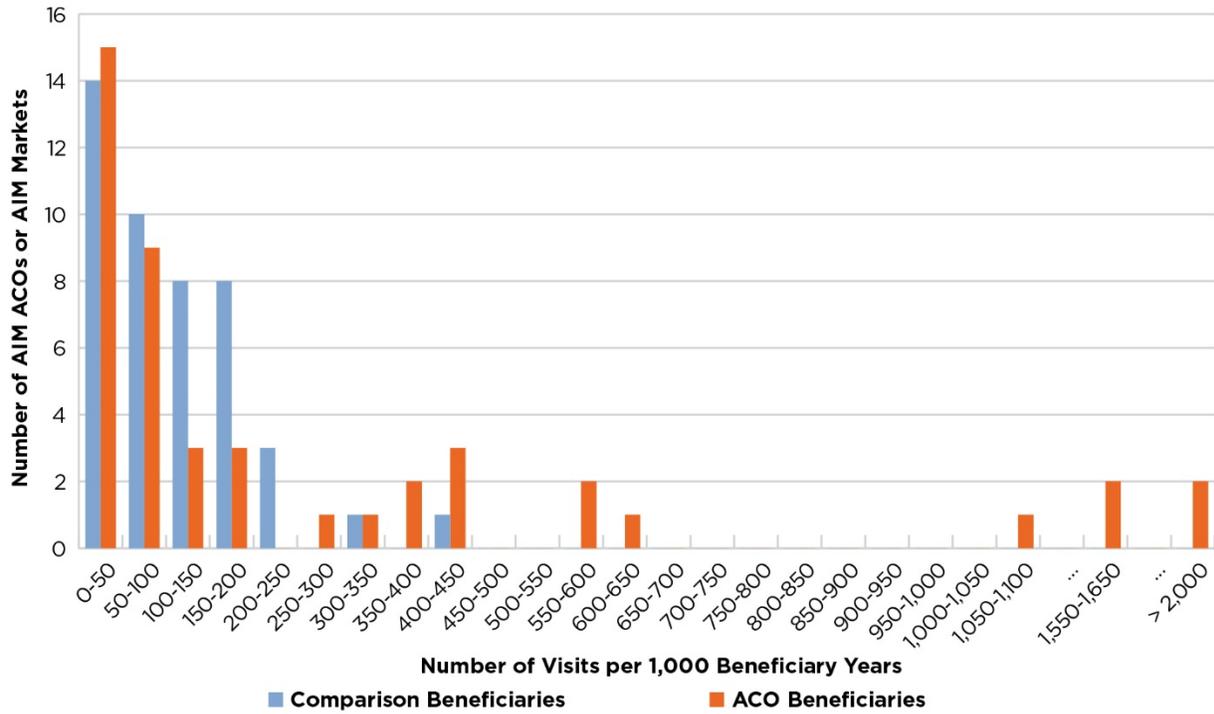
Exhibit 3G-1. Higher Rates of Annual Wellness Visits among AIM ACO Assigned Beneficiaries, 2017



Note: We identified Annual Wellness Visits using Medicare claims data using codes listed in **Appendix 3F**.

Exhibit 3G-2 demonstrates that higher use of CCM services among assigned AIM ACO beneficiaries, relative to comparison beneficiaries, is driven by higher utilization of services for beneficiaries from fewer than 10 AIM ACOs. While the majority of beneficiaries, assigned to ACOs or in their markets, receive fewer than 200 CCM services per 1,000 beneficiary years, assigned beneficiaries of eight AIM ACOs received more than 550 CCM services per 1,000 beneficiary years in 2017, with clear outliers ranging above 1,000 and even 2,000 services per 1,000 beneficiary years.

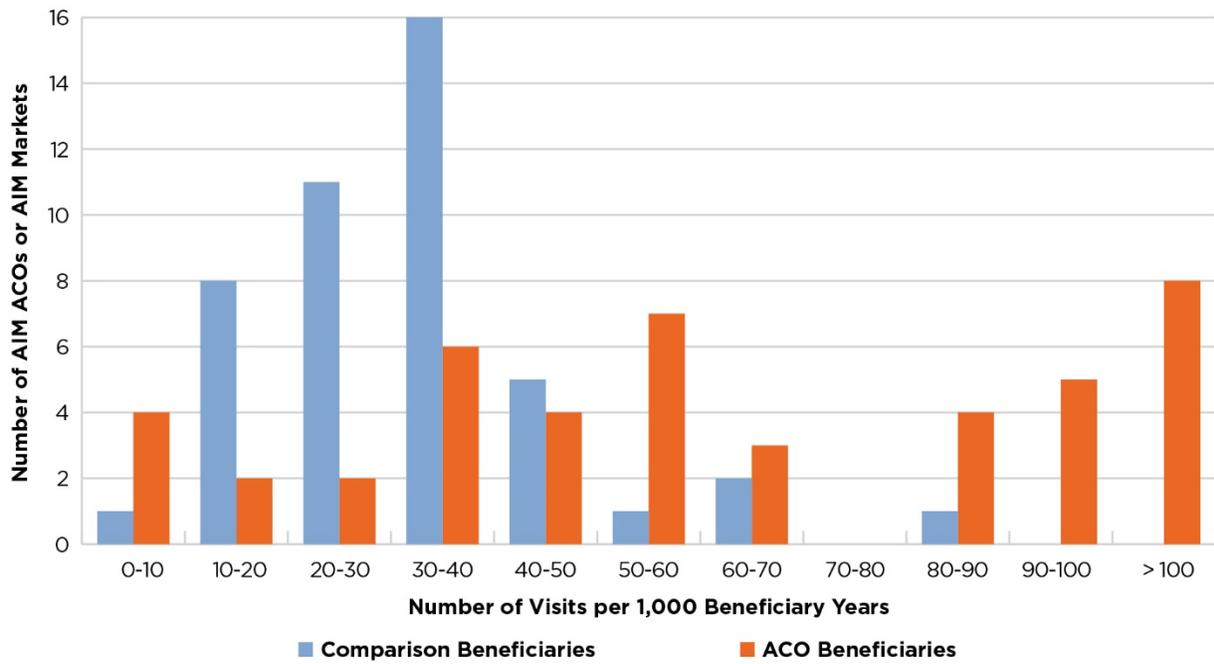
Exhibit 3G-2. High Rates of Chronic Care Management among AIM ACO Assigned Beneficiaries Driven by Few ACOs, 2017



Note: We identified Chronic Care Management (CCM) services using Medicare claims data using codes listed in Appendix 3F.

Though the level of utilization is lower than AWW and CCM services, receipt of TCM services displayed more variation among assigned beneficiaries of AIM ACOs than the comparison beneficiaries. Results are shown in Exhibit 3G-3.

Exhibit 3G-3. Higher Rates of Transitional Care Management Visits among AIM ACO Assigned Beneficiaries



Note: We identified Transitional Care Management (CCM) services using Medicare claims data using codes listed in Appendix 2D.

Appendix 4A. List of Non-AIM SSP ACOs that are Similar to AIM ACOs

Exhibit 4A-1. Non-AIM SSP ACO Comparison Groups for AIM Test 1 ACOs

SSP ACOs in PY1	In PY2
Comparison for Shared Savings Program 2015 Starters	
Frederick Integrated Healthcare Network	Yes
Holy Cross Physician Partners ACO	Yes
Health Alliance Integrated Care	No
PACN	Yes
St. Francis Accountable Health Network	Yes
RHS Regional Health Network	No
Capital Health ACO	Yes
Trinity Health Michigan ("St. Mary Mercy Hospital")	No
North Central Arizona Accountable Care	Yes
Physicians ACO	Yes
Connected Care	Yes
Healthcare Partners of the North Country	Yes
Advanced Premier Physicians ACO	Yes
Doctors ACO	Yes
CHWN ACO	Yes
Franciscan Riverview Health ACO	Yes
Carroll ACO	Yes
Quality Health Alliance-ACO	No
Springfield Clinic ACO	Yes
MissionPoint Evansville	Yes
MissionPoint Birmingham	Yes
Cape Fear Valley ACO	Yes
Bassett Accountable Care Partners	Yes
Adena Healthcare Collaborative	Yes
MHT-ACO	No
Aledade Primary Care ACO	Yes
Arkansas High Performance Network ACO of FQHC	Yes
West Tennessee Clinical Partners	Yes
Bluegrass Clinical Partners	Yes
Chrysalis - An ACO	Yes
Integrated Medical Staff of Jackson	Yes
Western Maryland Physician Network	Yes
BMC Integrated Care Services	Yes

SSP ACOs in PY1	In PY2
SSMOK ACO	No
Pricare ACO	Yes
Orange Accountable Care of New York	Yes
ASPA-Connected	Yes
Arkansas High Performance Network ACO of CAH	No
Richmond Quality	Yes
Inspira Care Connect	Yes
PQN - Central Texas	Yes
PrimeCare Select	No
Pioneer Health Alliance	Yes
The Health Network of Western Kentucky	Yes
Keystone Clinical Partners	Yes
Comparison for Shared Savings Program 2016 Starters	
UM ACO	Yes
Valley Health Alliance	Yes
Crescent City ACO	Yes
Think ACO	Yes
Central Florida ACO	Yes
Space Coast ACO	Yes
Eastern Kentucky Clinical Partners	Yes
Accountable Care Coalition of Northeast Georgia	Yes
Hudson Accountable Care	Yes
Baptist Physician Alliance ACO	Yes
CareAlliance: An ACO	Yes
Community Care Partnership of Maine	Yes
Matrix ACO	Yes
Next ACO of Nature Coast	Yes
Central Minnesota ACO	Yes
Mercy Accountable Care Network	No
Aledade Florida Central ACO	Yes
CHI Health Partners	Yes
Aledade Louisiana ACO	Yes
Sandhills Accountable Care Alliance	Yes
St. Josephs Health ACO	No
ACO of Floyd Medical Center	Yes
Delaware Care Collaboration DCC	Yes
Life Health Services	Yes
Milestone Health	Yes

SSP ACOs in PY1	In PY2
Consolidated Medical Practices of Memphis	Yes
Kentucky Physicians for Accountable Care	Yes
Princeton HealthCare Partners	Yes
CPG Quality Care Alliance	Yes
Empire State Health Partners	Yes
Bay Area Medical Associates ACO	No
Western Kentucky Clinical Partners	Yes
AccoCare	Yes
GHN ACO	Yes
AVANT MSO	Yes
Accountable Care of NEFL	Yes
Prime Accountable care	Yes
CHRISTUS Santa Rosa Quality Care Alliance	No
CVCHIP	Yes
Peninsula Regional Clinically Integrated Network	Yes
Baxter Physician Partners	Yes
Care4Texans	Yes
Cayuga Area Preferred	Yes
Health First Partners	Yes

Note: We selected similar non-AIM SSP ACOs that began the Shared Savings Program in the same year, were smaller in terms of number of assigned beneficiaries, did not participate in the AP model, and were in SSP financial risk track 1 in PY1. We indicate in the table if the selected SSP ACO continued to participate in PY2.

Exhibit 4A-2. Non-AIM SSP ACO Comparison Groups for AIM Test 2 ACOs

SSP ACOs in PY1	IN PY2
Comparison for Physicians Collaborative Trust of the Mississippi Gulf Coast (Shared Savings Program 2012 Starters)	
Arizona Connected Care	No
Florida Physicians Trust	No
Premier ACO Physicians Network	No
ACO of the North Country	No
Accountable Care Coalition of Coastal Georgia	No
Comparison for Baroma Healthcare International, The Premier HealthCare Network & Akira Health (Shared Savings Program 2013 Starters)	
Accountable Care Coalition of Western Georgia	Yes
Primary Care Alliance	Yes
Indiana Lakes ACO	Yes
Commonwealth Primary Care ACO	Yes
APCN-ACO	Yes
Christie Clinic Physician Services	Yes
Keystone ACO	Yes
MCM ACO	Yes
Accountable Care Coalition of Georgia	Yes
Morehouse Choice ACO-ES	Yes
Integral Healthcare	Yes
Indiana Care Organization	No
Paradigm ACO	Yes
Southern Maryland Integrated Care	Yes
Comparison for Sunshine ACO & PremierMD ACO (Shared Savings Program 2014 Starters)	
ACO Providers	Yes
Redwood Community Care Organization	Yes
Primary Comprehensive Care ACO	No
Physician First ACO	No
North Collaborative Care	Yes
ACMG	Yes
Midwest Health Coalition ACO	Yes
Carolinas ACO	No
NEPA ACO Company	No
Orange Accountable Care of South Florida	Yes
Physician Direct ACO	Yes

SSP ACOs in PY1	IN PY2
ACONA	Yes
Allied Physicians ACO	No
FamilyHealth ACO	Yes
Allegiance ACO	Yes
Primary PartnerCare ACO Independent Practice Association	Yes
Premier Choice ACO	No
New York State Elite (NYSE) ACO	No
Huntington Care Network ACO	Yes
Live Oak Care	Yes
Central US ACO	Yes
Buena Vida y Salud	Yes
Emerald Physicians	Yes
Loudoun Medical Group ACO	Yes
Oklahoma Health Initiatives	Yes
St Vincents ACO	Yes
Antelope Valley ACO	Yes
Accountable Care Alliance of Ventura	Yes
Health Point ACO	Yes
PMC ACO	Yes
St Joseph Health Partners ACO	Yes
Arkansas Accountable Care	No
Kansas Primary Care Alliance	Yes
Integrity Health Innovations	No
Augusta Care Partners	Yes
GGC ACO	Yes
Broward Guardian	Yes
JFK Health ACO	Yes
Community Health Accountable Care	Yes
UPSA ACO	Yes
Ingalls Care Network	Yes
Partners In Care ACO	Yes
Akira Health of Fresno	Yes
South Bend Clinic Accountable Care	Yes
Clinical Partners of Colorado Springs	Yes
Physicians Accountable Care of Utah	Yes
Louisiana Physicians ACO	Yes
RWJ Partners	Yes
Cleveland Quality Healthnet	Yes

SSP ACOs in PY1	IN PY2
Accountable Care Coalition of Mississippi	Yes
Accountable Care Coalition of Greater New York	Yes
Accountable Care Coalition of Maryland Primary Care	No

Note: We selected similar non-AIM SSP ACOs that began the Shared Savings Program in the same year, were smaller in terms of number of assigned beneficiaries, did not participate in the AP model, and were in SSP financial risk track 1 in PY1. We indicate in the table if the selected SSP ACO continued to participate in PY2.

Appendix 4B. Methodology for Comparing AIM ACOs to Non-AIM SSP ACOs

Comparing AIM ACOs to Non-AIM SSP ACOs

We compare AIM ACOs to non-AIM SSP ACOs to obtain the incremental effect of AIM funds on Shared Savings Program participation. AIM Test 1 and Test 2 ACOs were both compared to non-AIM SSP ACOs, but used different analytic methodologies since AIM Test 1 ACOs were new to the Shared Savings Program when they started AIM and AIM Test 2 ACOs were already participating in the Shared Savings Program when they started AIM.

Performance measures and statistical specification: We examined the 21 claims- or enrollment-based outcomes listed in **Chapter 1** and described in **Appendix 1F**. The statistical specification of the regression models differed for performance measures depending on the outcome's data distribution. **Appendix 2C** describes the statistical specification that was used for each outcome.

Risk adjustment and covariate balancing: We used the same risk adjustors for beneficiary-level analyses as described in **Appendix 2D** with the following exceptions: since the comparison group is not from the same market, we did not include PCSA fixed effects, but rather controlled for rurality, primary care HPSA, mental care HPSA, and market favorability scores. Similar to the AIM Test 1 ACO analyses, we applied beneficiary-level entropy balancing weights in beneficiary-level analyses so that covariates were balanced between the ACO and comparison groups (see **Chapter 2**).

Comparing AIM Test 1 ACOs to Non-AIM SSP ACOs

We compare AIM Test 1 ACOs to similar non-AIM ACOs on outcomes using the following steps:

1. Obtain a DID estimate for each AIM and a DID estimate for each non-AIM SSP ACO using each ACO's non-ACO FFS market comparison beneficiaries (see **Chapter 2**).
2. Compute the average impact for similar non-AIM ACOs by SSP start year, using entropy balancing for the following characteristics of the accompanying AIM ACO in each performance year: percent rural, percent primary care HPSA, and number of beneficiaries, and marketplace favorability scores.
3. Compute the difference between the DID estimate for each AIM ACO (Step 1) and the mean DID estimate across each AIM ACO's similar non-AIM SSP ACOs (Step 2) and then averaging those differences across all non-AIM SSP ACOs based on the proportion of beneficiaries assigned to each ACO to create a non-AIM SSP ACO aggregate difference.

The difference between each AIM ACO difference and its corresponding non-AIM SSP ACO aggregate difference is the estimated incremental effect of AIM funds on Shared Savings Program participation for a given outcome.

To obtain the DID estimate for each AIM Test 1 ACO and similar non-AIM SSP ACO, we use the same methodology described in **Chapter 2**.

Comparing AIM Test 2 ACOs to Non-AIM SSP ACOs

We used a DID framework similar to the one used for AIM Test 1 ACOs to compare outcomes of AIM Test 2 ACOs with non-AIM SSP ACOs (**Chapter 2**). The key difference is that the comparison for each AIM Test 2 ACO is directly the beneficiaries assigned to similar non-AIM SSP ACOs since AIM Test 2 ACOs were existing SSP ACOs when they began AIM. This comparison group was defined to examine the incremental effect of AIM funds over Shared Savings Program participation. Our analytic approach is detailed below.

Assignment algorithm: To assign beneficiaries to SSP ACOs in the baseline and performance years, we used the assignment algorithm for the corresponding performance year, as discussed in **Appendix 1C**.

Baseline and performance time periods: For AIM Test 2 ACOs, we used a baseline period of two years prior to AIM start, as shown in **Exhibit 1-8**. Since AIM Test 2 ACOs existed as SSP ACOs in their baseline years, the actual participants in each baseline and performance year were used for beneficiary assignment. For the four AIM ACOs starting AIM in 2015, we used 2013 and 2014 as the baseline and 2016 as the second performance year.²⁹ For the two AIM ACOs starting AIM in 2016, we used 2014 and 2015 as the baseline and 2017 as the second performance year.

Analysis: For each outcome 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 similar non-AIM SSP ACOs based on the weighting methodology described below. We then averaged this difference in each outcome among the non-AIM SSP ACOs by using the number of beneficiaries assigned in the performance year as a weight. The difference between the AIM ACO difference for a given outcome and the aggregated non-AIM SSP ACO difference represented the incremental effect of AIM funds on Share Savings Program participation.

Parallel trends testing: Our strategy of comparing beneficiaries assigned to AIM Test 2 ACOs to beneficiaries assigned to similar non-AIM SSP ACOs hinges on the assumption that the two groups would have experienced similar trends in outcomes in the absence of AIM. This comparison would be problematic if we observed substantial differences in key outcomes of interest relative to similar non-AIM SSP ACOs prior to AIM participation. We tested this parallel trend assumption for total Medicare spending. Although all four AIM Test 2 ACOs passed parallel trends tests at the 5 percent statistical significance level, confidence intervals for the estimates of interest were large. Most notably, we have a 95 percent confidence that the difference in trends of total spending in the baseline period between Akira Health (A1744) and similar non-AIM ACOs ranges between -\$5.83 and \$184.75. While the p-value of 0.07 indicates that this “pre-trend” is not statistically significant at conventional levels, a trend of up to \$184.75 could influence our impact estimates.

²⁹ 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.

Appendix 4C. Impacts for AIM and Similar Non-AIM SSP ACOs for Claims-based Measures in PY2

Exhibit 4C-1. Difference in Impacts on Total, Inpatient, Physician, and Outpatient Spending for AIM Test 1 ACOs and Non-ACO FFS Beneficiaries in PY2

ACO Name	Total Spending		Inpatient Spending		Physician Spending		Outpatient Spending	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
Carolina Medical Home Network	-4.82	No	-7.57	No	-0.20	No	12.95	No
Illinois Rural Community Care Organization	31.25	No	15.11	No	-1.16	No	-0.91	No
Reid ACO	97.46	No	20.72	No	3.34	No	15.59	No
Akira Health of Los Angeles	32.05	No	12.39	No	13.18	No	-3.07	No
American Rural ACO	33.87	No	0.93	No	2.96	No	4.10	No
Access Care Oklahoma	19.57	No	-1.33	No	12.60	No	-10.08	No
Citrus County ACO	-66.20	No	-22.58	No	19.16	Yes	-15.83	No
AmpliPHY of Texas ACO	-50.24	No	1.76	No	-7.72	No	-13.13	No
AmpliPHY of Kentucky ACO	-50.97	No	-3.62	No	0.16	No	-12.11	No
National Rural ACO 3	-62.25	No	-23.04	No	-7.01	No	2.05	No
Avera ACO	-59.07	No	-26.54	No	3.06	No	-15.72	No
Avera ACO II	-50.57	No	-12.07	No	-0.95	No	-8.92	No
National Rural ACO 6	-47.38	No	-9.01	No	3.54	No	-26.07	Yes
Iowa Rural ACO	-44.05	No	-4.75	No	0.22	No	-21.38	Yes
Illinois Rural ACO	-56.34	No	-9.20	No	0.81	No	-0.97	No
Indiana Rural ACO II	-24.36	No	-10.02	No	-10.23	No	-4.50	No
Indiana Rural ACO	4.47	No	-2.72	No	-0.22	No	3.09	No
Michigan Rural ACO	21.71	No	-0.07	No	5.21	No	1.68	No
Michigan Rural ACO II	-19.87	No	-8.68	No	3.55	No	-11.22	No
New Hampshire Rural ACO	-101.21	Yes	-3.19	No	1.71	No	-25.94	Yes
National Rural ACO 14	-8.56	No	-5.52	No	4.02	No	-8.93	No
National Rural ACO 16	-149.99	Yes	-56.19	Yes	-7.89	No	-25.01	Yes
North Mississippi ACO	10.39	No	2.94	No	9.69	No	-3.64	No
National Rural ACO 20	-77.65	Yes	-7.40	No	-8.06	No	-21.87	Yes

ACO Name	Total Spending		Inpatient Spending		Physician Spending		Outpatient Spending	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
Minnesota Rural ACO	-23.50	No	-22.05	No	4.98	No	-12.84	No
National Rural ACO 22	1.49	No	-3.08	No	6.53	No	-0.62	No
National Rural ACO 23	7.68	No	0.68	No	3.65	No	-0.90	No
National Rural ACO 24	-30.81	No	3.24	No	-1.53	No	-10.12	No
Aledade Kansas ACO	0.50	No	-16.44	No	10.67	No	-5.83	No
Aledade West Virginia ACO	-26.55	No	-21.79	No	3.29	No	-10.88	No
Heartland Physicians ACO	-76.68	Yes	-17.53	No	-0.94	No	-16.79	No
Alliance ACO	16.19	No	-11.68	No	12.97	No	-0.72	No
Kentucky Primary Care Alliance	-43.00	No	-25.51	No	0.81	No	-1.48	No
Aledade Mississippi ACO	-32.04	No	-6.66	No	-5.07	No	1.39	No
Tar River Health Alliance	8.05	No	-0.40	No	3.14	No	-1.39	No
Affiliated ACO	-58.84	No	-19.38	No	-2.46	No	-13.25	No
California ACO	-109.71	Yes	-56.14	Yes	4.26	No	-6.57	No
San Juan ACO	-29.98	No	-5.59	No	0.67	No	-7.74	No
Rocky Mountain ACO	-29.20	No	-4.70	No	0.85	No	-9.24	No
MissouriHealth+	0.51	No	4.52	No	-0.37	No	-12.35	No
Beacon Rural Health	-17.75	No	-2.73	No	7.61	No	-14.92	No

[a] Difference between beneficiaries assigned to AIM ACOs and their FFS local market comparisons, net of the analogous difference across similar SSP ACOs.

[b] "Yes" indicates that AIM ACOs impact estimate is greater than 1.96 x standard deviation of the non-AIM SSP ACO average impact estimate and are highlighted in the table.

Exhibit 4C-2. Difference in Impacts in SNF, HHA, and DME Spending for AIM Test 1 ACOs and Non-ACO FFS Beneficiaries in PY2

ACO Name	SNF Spending		HHA Spending		DME Spending	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
Carolina Medical Home Network	3.59	No	-0.76	No	0.62	No
Illinois Rural Community Care Organization	19.51	No	1.86	No	-0.97	No
Reid ACO	21.64	No	4.07	No	0.61	No
Akira Health of Los Angeles	11.98	No	-2.13	No	-0.13	No
American Rural ACO	0.64	No	2.04	No	-2.05	No
Access Care Oklahoma	-1.08	No	-5.15	No	-0.27	No
Citrus County ACO	-41.24	Yes	-12.06	Yes	-1.49	No
AmpliPHY of Texas ACO	-10.29	No	-0.04	No	-1.23	No
AmpliPHY of Kentucky ACO	-18.76	No	-0.73	No	0.41	No
National Rural ACO 3	-3.89	No	-1.43	No	-3.25	Yes
Avera ACO	-18.00	No	-0.19	No	-0.71	No
Avera ACO II	-35.83	Yes	-1.97	No	0.21	No
National Rural ACO 6	7.42	No	-2.08	No	-0.40	No
Iowa Rural ACO	-10.25	No	-3.46	No	-0.95	No
Illinois Rural ACO	-17.46	No	-2.42	No	-0.22	No
Indiana Rural ACO II	0.33	No	-3.01	No	1.77	No
Indiana Rural ACO	1.70	No	-5.05	No	-1.29	No
Michigan Rural ACO	10.24	No	-0.56	No	-0.13	No
Michigan Rural ACO II	-5.02	No	-1.09	No	0.02	No
New Hampshire Rural ACO	-25.04	No	-7.52	Yes	-1.39	No
National Rural ACO 14	-8.35	No	1.39	No	-0.03	No
National Rural ACO 16	-27.96	No	-7.76	Yes	-0.28	No
North Mississippi ACO	1.99	No	-4.19	No	-2.36	No
National Rural ACO 20	0.93	No	-2.96	No	1.02	No
Minnesota Rural ACO	-1.54	No	-3.62	No	0.45	No
National Rural ACO 22	-7.29	No	-3.15	No	-0.33	No
National Rural ACO 23	7.60	No	-1.42	No	-1.53	No
National Rural ACO 24	-6.49	No	-6.67	Yes	0.40	No
Aledade Kansas ACO	-2.15	No	-0.58	No	0.54	No
Aledade West Virginia ACO	1.63	No	-4.06	No	-1.01	No
Heartland Physicians ACO	-19.56	No	0.72	No	-2.23	No
Alliance ACO	-15.05	No	1.68	No	1.43	No
Kentucky Primary Care Alliance	-18.38	No	-4.12	No	0.61	No

ACO Name	SNF Spending		HHA Spending		DME Spending	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
Aledade Mississippi ACO	14.65	No	-8.71	Yes	-2.05	No
Tar River Health Alliance	-9.75	No	1.09	No	0.81	No
Affiliated ACO	-12.88	No	0.90	No	-3.37	Yes
California ACO	-49.41	Yes	-7.72	Yes	-1.01	No
San Juan ACO	-3.05	No	-1.71	No	-2.51	Yes
Rocky Mountain ACO	-10.13	No	-5.34	No	-0.28	No
MissouriHealth+	1.79	No	0.33	No	-0.47	No
Beacon Rural Health	-5.72	No	-1.47	No	-1.36	No

[a] Difference between beneficiaries assigned to AIM ACOs and their FFS local market comparisons, net of the analogous difference across similar SSP ACOs.

[b] "Yes" indicates that AIM ACOs impact estimate is greater than 1.96 x standard deviation of the non-AIM SSP ACO average impact estimate and are highlighted in the table.

Exhibit 4C-3. Difference in Impacts for Acute Stays, ED Visits, and Observational Visits for AIM Test 1 ACOs and Non-ACO FFS Beneficiaries in PY2

ACO Name	Any Acute Stay		ED Visit -- No Acute		ED Visit -- Acute		Observation Stay	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
Carolina Medical Home Network	-0.21	No	-0.01	Yes	-0.01	No	-0.13	No
Illinois Rural Community Care Organization	0.73	No	0.00	No	-0.42	No	1.48	No
Reid ACO	1.50	No	0.01	No	-0.04	No	1.15	No
Akira Health of Los Angeles	0.83	No	0.00	No	1.01	No	0.73	No
American Rural ACO	0.40	No	0.00	No	0.34	No	-0.19	No
Access Care Oklahoma	-0.36	No	0.00	No	-0.58	No	1.39	No
Citrus County ACO	-1.45	Yes	-0.03	Yes	0.18	No	-1.34	No
AmpliPHY of Texas ACO	-0.03	No	0.01	No	0.04	No	-0.20	No
AmpliPHY of Kentucky ACO	-0.45	No	-0.01	No	-0.07	No	0.14	No
National Rural ACO 3	-1.22	Yes	-0.02	Yes	0.55	No	-0.73	No
Avera ACO	-0.63	No	-0.02	No	-0.41	No	-1.23	No
Avera ACO II	-0.83	No	-0.01	No	-2.18	Yes	1.03	No
National Rural ACO 6	-0.93	No	-0.02	No	-1.16	No	0.58	No
Iowa Rural ACO	0.38	No	0.00	No	0.12	No	-0.06	No
Illinois Rural ACO	-0.15	No	0.00	No	0.35	No	-0.24	No
Indiana Rural ACO II	0.42	No	0.00	No	-1.64	No	1.93	Yes
Indiana Rural ACO	0.10	No	0.00	No	0.55	No	-0.02	No
Michigan Rural ACO	-0.37	No	-0.01	No	-0.02	No	-0.33	No
Michigan Rural ACO II	0.06	No	-0.01	No	-0.27	No	-0.23	No
New Hampshire Rural ACO	-0.56	No	-0.01	No	-0.47	No	0.38	No
National Rural ACO 14	-0.43	No	-0.01	No	1.13	No	-0.84	No
National Rural ACO 16	-2.42	Yes	-0.05	Yes	0.30	No	-2.42	Yes
North Mississippi ACO	0.24	No	0.01	No	0.21	No	0.00	No
National Rural ACO 20	-0.67	No	-0.01	No	1.23	No	-0.12	No
Minnesota Rural ACO	-0.12	No	0.01	No	0.24	No	-0.23	No
National Rural ACO 22	-0.43	No	0.00	No	0.97	No	-0.33	No

ACO Name	Any Acute Stay		ED Visit -- No Acute		ED Visit -- Acute		Observation Stay	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
National Rural ACO 23	-0.51	No	0.00	No	0.40	No	-0.24	No
National Rural ACO 24	-0.60	No	-0.01	No	-1.10	No	-0.17	No
Aledade Kansas ACO	0.17	No	0.00	No	-0.49	No	0.60	No
Aledade West Virginia ACO	-0.97	No	-0.02	Yes	0.05	No	-1.98	Yes
Heartland Physicians ACO	-1.18	No	-0.02	Yes	-0.34	No	-2.01	Yes
Alliance ACO	0.89	No	0.00	No	0.03	No	0.39	No
Kentucky Primary Care Alliance	-0.89	No	-0.02	No	-2.16	Yes	-0.60	No
Aledade Mississippi ACO	-0.53	No	-0.01	No	0.88	No	-0.43	No
Tar River Health Alliance	-0.61	No	-0.02	No	-0.58	No	-0.80	No
Affiliated ACO	-0.95	No	-0.01	No	-1.88	Yes	-0.31	No
California ACO	-1.20	Yes	-0.03	Yes	0.50	No	-1.29	No
San Juan ACO	0.10	No	0.00	No	-0.35	No	-0.17	No
Rocky Mountain ACO	0.36	No	0.00	No	-0.13	No	0.60	No
MissouriHealth+	-0.40	No	0.01	No	-0.11	No	-0.44	No
Beacon Rural Health	-0.75	No	-0.01	No	-0.37	No	-0.45	No

[a] Difference between beneficiaries assigned to AIM ACOs and their FFS local market comparisons, net of the analogous difference across similar SSP ACOs.

[b] "Yes" indicates that AIM ACOs impact estimate is greater than 1.96 x standard deviation of the non-AIM SSP ACO average impact estimate and are highlighted in the table.

Exhibit 4C-4. Difference in Impacts for Hospice Use, Acute Stays, E&M Visits, and Imaging Events for AIM Test 1 ACOs and Non-ACO FFS Beneficiaries in PY2

ACO Name	Any Hospice Use		Total Acute Stays		E&M Visits		Imaging Events	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
Carolina Medical Home Network	-0.09	No	0.01	No	-0.02	No	0.19	No
Illinois Rural Community Care Organization	0.11	No	-0.64	No	0.20	No	0.28	No
Reid ACO	0.46	Yes	0.73	No	0.15	No	0.49	Yes
Akira Health of Los Angeles	0.17	No	0.75	No	0.54	No	0.63	Yes
American Rural ACO	-0.14	No	0.37	No	-0.32	No	-0.17	No
Access Care Oklahoma	0.17	No	0.75	No	-0.11	No	0.16	No
Citrus County ACO	-0.98	Yes	-0.54	No	-0.49	No	0.14	No
Ampliphy of Texas ACO	-0.10	No	-0.30	No	-0.13	No	-0.01	No
Ampliphy of Kentucky ACO	-0.38	No	1.11	No	-0.04	No	0.09	No
National Rural ACO 3	-0.09	No	0.88	No	-0.32	No	0.14	No
Avera ACO	-0.16	No	-0.18	No	-0.08	No	-0.31	No
Avera ACO II	-0.67	Yes	0.53	No	-0.32	No	0.70	Yes
National Rural ACO 6	0.15	No	-0.04	No	-0.14	No	0.28	No
Iowa Rural ACO	0.02	No	-0.97	No	-0.22	No	-0.13	No
Illinois Rural ACO	-0.36	No	0.55	No	-0.27	No	0.22	No
Indiana Rural ACO II	0.26	No	-0.37	No	0.20	No	-0.60	Yes
Indiana Rural ACO	0.24	No	-0.62	No	-0.10	No	-0.06	No
Michigan Rural ACO	0.32	No	0.66	No	-0.06	No	0.14	No
Michigan Rural ACO II	-0.05	No	0.83	No	-0.14	No	0.26	No
New Hampshire Rural ACO	-0.24	No	-1.10	No	-0.28	No	0.04	No
National Rural ACO 14	-0.10	No	0.24	No	-0.27	No	0.10	No
National Rural ACO 16	-0.71	Yes	0.26	No	-0.04	No	-0.13	No
North Mississippi ACO	-0.09	No	1.43	Yes	-0.41	No	0.18	No
National Rural ACO 20	0.05	No	-0.38	No	-0.66	Yes	-0.32	No
Minnesota Rural ACO	-0.14	No	-1.41	Yes	0.42	No	0.04	No
National Rural ACO 22	0.00	No	-0.16	No	-0.40	No	0.37	Yes

ACO Name	Any Hospice Use		Total Acute Stays		E&M Visits		Imaging Events	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
National Rural ACO 23	0.30	No	-0.42	No	-0.34	No	0.18	No
National Rural ACO 24	0.03	No	-0.58	No	-0.48	No	0.17	No
Aledade Kansas ACO	0.20	No	0.06	No	-0.81	Yes	0.27	No
Aledade West Virginia ACO	0.12	No	-0.79	No	0.04	No	-0.03	No
Heartland Physicians ACO	-0.44	No	0.63	No	-0.76	Yes	-0.38	Yes
Alliance ACO	-0.34	No	1.37	Yes	-0.04	No	0.28	No
Kentucky Primary Care Alliance	-0.43	No	0.61	No	-0.24	No	0.30	No
Aledade Mississippi ACO	0.38	No	0.07	No	-0.19	No	-0.28	No
Tar River Health Alliance	-0.21	No	-0.99	No	0.13	No	0.09	No
Affiliated ACO	-0.16	No	-0.05	No	-0.53	No	-0.19	No
California ACO	-0.84	Yes	0.35	No	0.04	No	0.16	No
San Juan ACO	0.05	No	0.58	No	-0.24	No	0.11	No
Rocky Mountain ACO	0.01	No	-0.50	No	-0.19	No	-0.02	No
MissouriHealth+	0.12	No	0.42	No	-0.22	No	-0.24	No
Beacon Rural Health	0.14	No	-0.75	No	-0.23	No	0.44	Yes

[a] Difference between beneficiaries assigned to AIM ACOs and their FFS local market comparisons, net of the analogous difference across similar SSP ACOs.

[b] "Yes" indicates that AIM ACOs impact estimate is greater than 1.96 x standard deviation of the non-AIM SSP ACO average impact estimate and are highlighted in the table.

Exhibit 4C-5. Difference in Impacts in Procedures, Test, and SNF Days for AIM Test 1 ACOs and Non-ACO FFS Beneficiaries in PY2

ACO Name	Procedures		Tests		SNF Days	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
Carolina Medical Home Network	0.13	No	-0.32	No	1.00	No
Illinois Rural Community Care Organization	-0.04	No	-0.15	No	0.32	No
Reid ACO	0.02	No	-0.07	No	-0.37	No
Akira Health of Los Angeles	0.22	Yes	0.44	Yes	-0.09	No
American Rural ACO	-0.12	No	-0.27	No	-1.78	Yes
Access Care Oklahoma	0.30	Yes	-0.32	No	3.02	Yes
Citrus County ACO	0.04	No	1.27	Yes	5.22	Yes
AmpliPHY of Texas ACO	-0.13	No	0.09	No	-1.69	No
AmpliPHY of Kentucky ACO	-0.08	No	-0.04	No	0.72	No
National Rural ACO 3	-0.20	No	-0.01	No	-0.34	No
Avera ACO	-0.08	No	0.61	Yes	1.32	No
Avera ACO II	0.15	No	-0.28	No	1.19	No
National Rural ACO 6	-0.05	No	-0.16	No	0.32	No
Iowa Rural ACO	-0.18	No	-0.06	No	-0.15	No
Illinois Rural ACO	-0.06	No	-0.18	No	0.78	No
Indiana Rural ACO II	-0.18	No	-0.12	No	-0.93	No
Indiana Rural ACO	-0.10	No	0.12	No	1.22	No
Michigan Rural ACO	0.40	Yes	0.04	No	0.03	No
Michigan Rural ACO II	0.05	No	-0.10	No	1.17	No
New Hampshire Rural ACO	-0.15	No	0.43	No	0.40	No
National Rural ACO 14	0.00	No	0.04	No	0.86	No
National Rural ACO 16	-0.63	Yes	-0.47	No	-0.41	No
North Mississippi ACO	0.05	No	0.39	No	1.89	Yes
National Rural ACO 20	-0.10	No	-0.27	No	0.47	No
Minnesota Rural ACO	0.11	No	-0.02	No	1.26	No
National Rural ACO 22	-0.13	No	-0.01	No	0.94	No
National Rural ACO 23	-0.05	No	0.17	No	0.71	No

ACO Name	Procedures		Tests		SNF Days	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
National Rural ACO 24	-0.09	No	-0.48	No	0.15	No
Aledade Kansas ACO	0.19	No	0.00	No	0.93	No
Aledade West Virginia ACO	-0.11	No	0.39	No	-0.13	No
Heartland Physicians ACO	-0.12	No	0.00	No	-0.71	No
Alliance ACO	0.27	No	0.41	No	0.77	No
Kentucky Primary Care Alliance	0.01	No	-0.15	No	-0.19	No
Aledade Mississippi ACO	-0.65	Yes	-0.43	No	-0.61	No
Tar River Health Alliance	0.06	No	-0.35	No	1.65	No
Affiliated ACO	-0.03	No	-0.34	No	0.00	No
California ACO	0.05	No	0.84	Yes	1.78	No
San Juan ACO	-0.02	No	-0.01	No	0.17	No
Rocky Mountain ACO	0.04	No	-0.48	No	0.77	No
MissouriHealth+	-0.01	No	-0.23	No	-1.46	No
Beacon Rural Health	-0.04	No	0.43	No	0.60	No

[a] Difference between beneficiaries assigned to AIM ACOs and their FFS local market comparisons, net of the analogous difference across similar SSP ACOs.

[b] "Yes" indicates that AIM ACOs impact estimate is greater than 1.96 x standard deviation of the non-AIM SSP ACO average impact estimate and are highlighted in the table.

Exhibit 4C-6. Difference in Impacts in Readmission, ASC Admission and Mortality for AIM Test 1 ACOs and Non-ACO FFS Beneficiaries in PY2

ACO Name	Any Readmission		Any ASC Admission		Mortality	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
Carolina Medical Home Network	-0.03	No	-0.07	No	-0.26	No
Illinois Rural Community Care Organization	0.20	No	-0.22	No	-0.16	No
Reid ACO	0.39	No	0.06	No	-0.22	No
Akira Health of Los Angeles	0.44	No	0.78	No	-0.13	No
American Rural ACO	-0.01	No	0.47	No	0.58	No
Access Care Oklahoma	-0.27	No	0.32	No	0.22	No
Citrus County ACO	-0.27	No	-0.47	No	-0.73	Yes
AmpliPHY of Texas ACO	-0.23	No	-0.35	No	-0.23	No
AmpliPHY of Kentucky ACO	-0.15	No	-0.73	Yes	-0.96	Yes
National Rural ACO 3	-0.21	No	-0.52	No	-0.49	No
Avera ACO	-0.09	No	-0.40	No	-0.36	No
Avera ACO II	-0.19	No	-0.49	No	-0.35	No
National Rural ACO 6	-0.09	No	-0.54	No	-1.10	Yes
Iowa Rural ACO	-0.23	No	0.02	No	0.06	No
Illinois Rural ACO	-0.01	No	-0.10	No	-0.80	Yes
Indiana Rural ACO II	-0.32	No	-0.68	No	-0.21	No
Indiana Rural ACO	-0.32	No	-0.02	No	-0.26	No
Michigan Rural ACO	-0.33	No	-0.37	No	0.66	No
Michigan Rural ACO II	-0.24	No	-0.02	No	-0.21	No
New Hampshire Rural ACO	0.04	No	0.01	No	0.11	No
National Rural ACO 14	-0.13	No	-0.66	No	-0.05	No
National Rural ACO 16	-0.62	Yes	-0.58	No	-0.82	Yes
North Mississippi ACO	0.02	No	0.09	No	-0.31	No
National Rural ACO 20	-0.22	No	-0.13	No	0.02	No
Minnesota Rural ACO	0.16	No	0.35	No	0.12	No
National Rural ACO 22	-0.24	No	0.00	No	-0.11	No

ACO Name	Any Readmission		Any ASC Admission		Mortality	
	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]	Difference [a]	>1.96*SD [b]
National Rural ACO 23	-0.28	No	-0.17	No	0.32	No
National Rural ACO 24	-0.15	No	-0.31	No	-0.39	No
Aledade Kansas ACO	-0.16	No	-0.05	No	0.05	No
Aledade West Virginia ACO	-0.42	No	-0.60	No	-0.62	No
Heartland Physicians ACO	-0.62	Yes	-0.16	No	-0.29	No
Alliance ACO	-0.14	No	0.31	No	-0.04	No
Kentucky Primary Care Alliance	-0.08	No	-0.51	No	-0.31	No
Aledade Mississippi ACO	-0.42	No	-0.47	No	0.37	No
Tar River Health Alliance	-0.54	Yes	-0.54	No	-0.08	No
Affiliated ACO	-0.10	No	0.19	No	-0.41	No
California ACO	-0.61	Yes	-0.80	Yes	-0.55	No
San Juan ACO	0.14	No	-0.52	No	-0.71	Yes
Rocky Mountain ACO	-0.15	No	0.08	No	-0.43	No
MissouriHealth+	0.20	No	-0.06	No	0.20	No
Beacon Rural Health	0.33	No	-0.06	No	0.03	No

[a] Difference between beneficiaries assigned to AIM ACOs and their FFS local market comparisons, net of the analogous difference across similar SSP ACOs.

[b] "Yes" indicates that AIM ACOs impact estimate is greater than 1.96 x standard deviation of the non-AIM SSP ACO average impact estimate and are highlighted in the table.

Exhibit 4C-7. Impact Estimates for AIM Test 2 ACOs in PY2

Performance Measure[d]	The Premier Healthcare Network		Akira Health		Sunshine ACO		PremierMD ACO	
	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value	Estimate	P-Value
Medicare payments (PBPM)								
Total	-79.12	0.040	-31.27	0.390	-178.66	0.000	-56.15	0.160
Acute inpatient	-19.01	0.150	-10.63	0.600	-40.63	0.000	-8.75	0.500
Physician services	-4.30	0.610	-3.62	0.540	-10.11	0.160	-4.83	0.470
Hospital outpatient and ambulatory surgery centers	-16.73	0.010	5.18	0.590	-20.41	0.000	-27.08	0.000
Skilled nursing facility	-9.41	0.100	-51.74	0.000	2.04	0.770	5.67	0.420
Home health	-2.53	0.430	7.14	0.200	-4.54	0.370	-5.30	0.270
Durable medical equipment	-0.67	0.530	0.83	0.350	-0.74	0.540	1.43	0.030
Inpatient utilization								
Any acute hospitalization (%)	0.10	0.870	0.67	0.330	-3.35	0.000	0.07	0.890
# Acute hospitalizations	0.00	0.960	0.01	0.400	-0.04	0.000	0.00	0.850
All-cause 30-day readmission (%)	-0.52	0.010	0.38	0.100	-0.35	0.170	0.38	0.150
Any ambulatory care sensitive admission (%)	0.04	0.890	0.25	0.260	-0.95	0.000	0.16	0.690
Emergency department and observation utilization								
Any ED visit not resulting in hospital admission (%)	-0.71	0.360	-0.32	0.440	0.95	0.190	0.23	0.770
Any ED visit resulting in hospital admission (%)	0.55	0.400	0.35	0.530	-3.02	0.000	-0.18	0.760
Any observation stays (inpatient or outpatient) (%)	-1.55	0.010	-0.37	0.230	0.48	0.370	-1.28	0.060
Post-acute care and hospice utilization								
# SNF days	-0.22	0.140	-0.80	0.000	-0.01	0.950	0.16	0.370
Any hospice use (%)	0.41	0.000	-0.02	0.910	-0.13	0.470	-0.40	0.210
Physician services utilization								
# Physician office-based E&M visits	-0.15	0.570	0.00	0.980	0.07	0.610	-0.08	0.820
# Imaging events	-0.50	0.010	0.07	0.460	-0.85	0.000	-0.13	0.500
# Procedures	-1.08	0.000	-0.19	0.550	1.43	0.090	-0.38	0.140
# Tests	2.12	0.030	1.61	0.030	-1.10	0.080	1.52	0.010
Mortality (%)	-0.13	0.620	-0.18	0.400	0.96	0.000	-0.04	0.930

Note: We compared each outcome between beneficiaries assigned to AIM ACOs and beneficiaries assigned to similar non-AIM SSP ACOs in the performance and baseline years using a DID approach. Statistically significant estimates at the 5 percent level are highlighted.

Appendix 4D. AIM Test 1 and Similar Non-AIM SSP ACO Impact Estimates

	PY1 Impact Estimate, AIM ACOs	PY1 Impact Estimate, non-AIM ACOs	PY2 Impact Estimate, AIM ACOs	PY2 Impact Estimate, non-AIM ACOs
Medicare spending (\$ PBPM)				
Total	-\$22.70	\$2.15	-\$32.68	\$2.87
Acute inpatient	-\$7.03	\$1.01	-\$10.77	-\$3.86
Physician services	\$1.11	-\$1.11	\$0.20	\$1.65
Hospital outpatient and ambulatory surgery centers	-\$5.87	\$1.44	-\$4.96	\$0.64
Skilled nursing facility	-\$4.05	\$1.94	-\$6.32	-\$0.28
Home health	-\$1.87	\$0.69	-\$2.62	-\$0.58
Durable medical equipment	-\$0.37	\$0.28	-\$0.63	\$0.11
Inpatient utilization				
Any acute hospitalization (% points)	-0.5	-0.2	-0.4	-0.2
# Acute hospitalizations	0.0	0.0	0.0	0.0
All-cause 30-day readmission (% points)	-0.1	0.1	-0.1	0.0
Any ambulatory care sensitive admission (% points)	-0.2	0.1	-0.1	0.2
Emergency department and observation utilization				
Any ED visit not resulting in hospital admission (% points)	-0.3	-0.3	-0.5	-0.2
Any ED visit resulting in hospital admission (% points)	-0.2	0.0	-0.2	0.0
Any observation stays (inpatient or outpatient) (% points)	-0.3	-0.3	-0.4	-0.1
Post-acute care and hospice utilization				
# Skilled nursing facility days	-0.1	0.0	-0.1	0.0
Any hospice use (% points)	-0.1	0.1	-0.1	-0.1
Physician services utilization				
# Office-based E&M visits	0.1	0.0	0.1	0.1
# Imaging events	0.0	0.0	-0.1	-0.1
# Procedures	0.0	0.0	0.1	0.4
# Tests	0.6	0.0	0.7	-0.2
Mortality (% points)	-0.1	0.1	0.0	0.1

Note: Analysis of 41 AIM Test 1 ACOs and their non-AIM SSP ACOs comparators. Impact estimates were computed by comparing ACO assigned beneficiaries to non-ACO FFS beneficiaries located in the ACOs' markets, as described in **Chapter 2** and **Appendix 4B**. No tests of statistical significance undertaken in this analysis. PBPM = per beneficiary per month; ED = emergency department; SNF = skilled nursing facility; E&M - evaluation and management.

Source: ACO Provider RIF for 2016-2017 and 2013-2017 Medicare claims data.

Appendix 4E. DID Estimates for All AIM Test 2 ACOs Compared to Similar Non-AIM SSP ACOs in PY1

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	-0.5%	0
Physician services	-\$12.19	\$317.19	-3.8%	2
Hospital outpatient and ambulatory surgery centers	-\$0.44	\$181.53	-0.2%	0
Skilled nursing facility	\$0.02	\$116.49	0.0%	0
Home health	-\$7.08	\$72.92	-9.7%	1
Durable medical equipment	-\$0.06	\$14.56	-0.4%	1
Inpatient utilization				
Any acute hospitalization (% points)	0.0	0.3	2.1%	0
# Acute hospitalizations	0.1	21.4	0.3%	0
All-cause 30-day readmission (% points)	-0.1	3.3	-4.0%	0
Any ambulatory care sensitive admission (% points)	0.1	5.1	1.9%	0
Emergency department and observation utilization				
Any ED visit not resulting in hospital admission (% points)	0.3	19.1	1.7%	0
Any ED visit resulting in hospital admission (% points)	0.1	17.9	0.6%	0
Any observation stays (inpatient or outpatient) (% points)	-0.6	10.0	-6.1%	2
Post-acute care and hospice utilization				
# SNF days	0.0	2.2	1.2%	0
Any hospice use (% points)	0.1	3.8	3.3%	0
Physician services utilization				
# Physician office-based E&M visits	-0.1	10.2	-1.0%	1
# Imaging events	-0.1	5.6	-1.3%	0
# Procedures	-0.4	8.0	-4.5%	1
# Tests	-0.1	21.6	-0.2%	1
Mortality (%)	0.0	4.7	-0.9%	0

[a] Estimate from the DID model, showing the marginal increase or decrease in each outcome between beneficiaries assigned to AIM Test 2 ACOs (6 ACOs) and beneficiaries assigned to similar 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 similar 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.

Source: ACO Provider RIFs for 2015-2016 and 2013-2016 Medicare claims data.

Appendix 5A. Methodology for Estimating the Effect of AIM on Quality

Patient/Caregiver Experience Measure Components

Getting timely care, appointments, and information:

- In the last 6 months, when you phoned this provider's office to get an appointment for care you needed right away, how often did you get an appointment as soon as you needed?
- In the last 6 months, when you made an appointment for a check-up or routine care with this provider, how often did you get an appointment as soon as you needed?
- In the last 6 months, when you phoned this provider's office during regular office hours, how often did you get an answer to your medical question that same day?
- In the last 6 months, when you phoned this provider's office after regular office hours, how often did you get an answer to your medical question as soon as you needed?
- In the last 6 months, how often did you see this provider within 15 minutes of your appointment time?

How well your doctors communicate

- In the last 6 months, how often did this provider explain things in a way that was easy to understand?
- In the last 6 months, how often did this provider listen carefully to you?
- In the last 6 months, how often did this provider give you easy to understand information about these health questions or concerns?
- In the last 6 months, how often did this provider seem to know the important information about your medical history?
- In the last 6 months, how often did this provider show respect for what you had to say?
- In the last 6 months, how often did this provider spend enough time with you?

Patient's rating of doctor

- Using any number from 0 to 10, where 0 is the worst provider possible and 10 is the best provider possible, what number would you use to rate this provider?

Access to specialists

- In the last 6 months, how often was it easy to get appointments with specialists?
- In the last 6 months, how often did the specialist you saw most seem to know the important information about your medical history?

Health promotion and education

- Your health care team includes all the doctors, nurses and other people you see for health care. In the last 6 months, did you and anyone on your health care team talk about specific things you could do to prevent illness?

- In the last 6 months, did you and anyone on your health care team talk about a healthy diet and healthy habits?
- In the last 6 months, did you and anyone on your health care team talk about the exercise or physical activity you get?
- In the last 6 months, did anyone on your health care team talk with you about specific goals for your health?
- In the last 6 months, did anyone on your health care team ask you if there was a period of time when you felt sad, empty, or depressed?
- In the last 6 months, did you and anyone on your health care team talk about things in your life that worry you or cause you stress?

Shared decision making

- Did you and this provider talk about the reasons you might want to take a medicine?
- Did you and this provider talk about the reasons you might not want to take a medicine?
- When you and this provider talked about starting or stopping a prescription medicine, did this provider ask what you thought was best for you?
- Did you and this provider talk about the reasons you might want to have the surgery or procedure?
- Did you and this provider talk about the reasons you might not want to have the surgery or procedure?
- When you and this provider talked about having surgery or a procedure, did this provider ask what you thought was best for you?

Regression Specification

For each performance year and quality measure, we specify the following contemporaneous regression model for estimating the difference between beneficiaries assigned to AIM Test 1 ACOs and non-ACO FFS beneficiaries in the ACOs' markets. We use an analogous equation to estimate the difference between beneficiaries assigned to similar non-AIM SSP ACOs and non-ACO FFS beneficiaries in the ACOs' markets as well as for AIM Test 2 ACOs versus similar SSP ACOs.

$$Y_{bt} = \alpha_0 + \alpha_1 AIM_{bt} + \alpha_2 X_{bt} + \varepsilon_{bt}, \text{ where}$$

- Y_{bt} : represents a measure of patient/caregiver experience reported by beneficiary b in year t
- AIM_{bt} : represents beneficiaries assigned to AIM ACOs in the performance year
- X_{bt} : represents beneficiary characteristics, including gender, race (black, Hispanic, or other), Medicaid dual eligibility, disability, long-term institutional care, age category, lagged HCC score, lagged HCC score squared, flags for missing HCC score, flags for 11 chronic conditions, flags for the number of chronic conditions, number of months enrolled in Medicare, mortality, flags for high utilization of health care, flag for low functional status, flag for low overall health, flag for low mental health, RUCA flag, flag for HPSA primary care designation, flag for HPSA mental care designation, flag for censored beneficiaries, and a flag for spillover beneficiaries. For the comparison of AIM Test 2 ACOs and similar SSP ACOs, we also include ACO-level flags

corresponding to SSP start year. In addition to including these characteristics as covariates, we use entropy balance (EB) weights. This approach ensures that comparison beneficiaries are similar to ACO beneficiaries in terms of those characteristics that likely affect patient experience.

The coefficient of interest, α_j , represents the effect of AIM on the dependent variable. For each specification, standard errors are clustered at the ACO level.

We note that the analyses are solely cross-sectional, so we cannot rule out that pre-existing differences in outcomes across ACO and comparison groups affected the results. However, we do account for a rich set of beneficiary characteristics. The results are based on the sample of those beneficiaries responding to the survey. As shown in **Exhibits 5-2** and **5-3**, beneficiaries responding to the CAHPS survey appear similar to all beneficiaries assigned to AIM ACOs along key observable characteristics, though there were some differences. Thus, the results may not necessarily generalize to all beneficiaries assigned to AIM ACOs. Finally, since CAHPS collects data from approximately the same number of beneficiaries in each ACO, all ACOs in the analyses receive approximately equal weight no matter the size of the ACO.

ACO-Level Quality Measures (Preventive Health and At-Risk Populations Domains)

For the ACO-level analysis of changes in quality between AIM ACOs and similar non-AIM ACOs, we adjusted for differences across the two groups using ACO-level entropy balancing weights:

- For Test 1 AIM ACOs, we used as weights the following three ACO characteristics: the number of assigned beneficiaries, percentage of assigned beneficiaries in rural areas, percentage of assigned beneficiaries residing in an area with a primary care HPSA designation, and mean favorability score associated with beneficiaries served by the ACO.
- For Test 2 AIM ACOs, we used as weights the following eight ACO characteristics: 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.³⁰

³⁰ Since AIM application decisions for AIM Test 2 ACOs did not consider geographic characteristics, we excluded these characteristics from entropy balancing when comparing these ACOs.

Appendix 5B. AIM and Patient/Caregiver Experience

Sample Sizes for the Analysis of Patient/Caregiver Experience Measures

Exhibit 5B-1: Number of Beneficiaries Assigned to AIM Test 1 ACOs and Non-ACO FFS Beneficiaries in the ACOs' Markets Responding to the CAHPS Survey

Group	Test 1 ACOs		FFS Comparison	
	N=41		PY1	PY2
	PY1	PY2		
Getting Timely Care, Appointments, and Information (ACO #1)	11,816	11,241	15,505	7,403
How Well Your Doctors Communicate (ACO #2)	11,828	11,257	15,522	7,417
Patient's Rating of Doctor (ACO #3)	11,780	11,160	14,913	7,130
Access to Specialists (ACO #4)	4,853	4,636	6,605	3,084
Health Promotion and Education (ACO #5)	13,002	12,276	17,065	8,152
Shared Decision Making (ACO #6)	11,826	11,226	15,002	7,183

Source: ACO, PQRS, and MIPS CAHPS beneficiary-level responses for 2015 to 2017 combined with Medicare claims data.

Appendix 5B-2: Number of Beneficiaries Assigned to Similar Non-AIM SSP ACOs and Non-ACO FFS Beneficiaries in the ACOs' Markets Responding to the CAHPS Survey

Group	SSP ACOs Similar to Test 1 ACOs		FFS Comparison	
	N=89	N=77	PY1	PY2
	PY1	PY2		
Getting Timely Care, Appointments, and Information (ACO #1)	24,117	22,840	29,210	20,803
How Well Your Doctors Communicate (ACO #2)	24,147	22,868	29,291	20,845
Patient's Rating of Doctor (ACO #3)	23,415	22,208	28,148	20,060
Access to Specialists (ACO #4)	11,010	10,474	13,536	9,222
Health Promotion and Education (ACO #5)	25,820	24,460	32,368	22,936
Shared Decision Making (ACO #6)	23,509	22,322	28,335	20,180

Source: ACO, PQRS, and MIPS CAHPS beneficiary-level responses for 2015 to 2017 combined with Medicare claims data.

Appendix 5B-3: Number of Beneficiaries Assigned to AIM Test 2 ACOs and Similar SSP ACOs Responding to the CAHPS Survey

Group	AIM Test 2 ACOs		Similar SSP ACOs	
	N=6	N=4	N=70	N=55
	PY1	PY2	PY1	PY2
Getting Timely Care, Appointments, and Information (ACO #1)	1,331	975	18,245	13,718
How Well Your Doctors Communicate (ACO #2)	1,332	986	18,276	13,739
Patient's Rating of Doctor (ACO #3)	1,290	967	17,767	13,378
Access to Specialists (ACO #4)	590	438	8,694	6,437
Health Promotion and Education (ACO #5)	1,412	1,048	19,592	14,713
Shared Decision Making (ACO #6)	1,301	977	17,836	13,433

Source: ACO, PQRS, and MIPS CAHPS beneficiary-level responses for 2015 to 2017 combined with Medicare claims data.

Additional Findings for the Analysis of Patient/Caregiver Experience Measures

Exhibit 5B-4. Regression-Adjusted Differences in Patient/Caregiver Measures for Beneficiaries Assigned to Non-AIM SSP ACOs that are Similar to AIM Test 1 ACOs and Non-ACO FFS Beneficiaries in the ACOs' Markets

	PY1			PY2		
	Adjusted Mean, Aim	Adjusted Mean, Ffs Comparison	Estimate	Adjusted Mean, Aim	Adjusted Mean, Ffs Comparison	Estimate
Getting Timely Care, Appointments, and Information	76.3%	77.0%	-0.7%	76.6%	76.4%	0.2%
How Well Your Doctors Communicate	92.4%	92.5%	-0.2%	92.4%	92.2%	0.3%
Patient's Rating of Doctor	92.1%	92.2%	-0.1%	92.1%	92.2%	-0.1%
Access to Specialists	83.1%	83.0%	0.1%	83.2%	82.9%	0.3%
Health Promotion and Education	59.9%	61.3%	-1.3%**	62.1%	61.3%	0.8%
Shared Decision Making	64.3%	63.9%	0.4%	64.6%	64.2%	0.4%

Note: **Indicates statistical significance at 5% level.

Source: ACO, PQRS, and MIPS CAHPS beneficiary-level responses for 2015 to 2017 combined with Medicare claims data.

Exhibit 5B-5. Regression-Adjusted Differences in Patient/Caregiver Measures for Beneficiaries Assigned to AIM Test 2 ACOs and Similar SSP ACOs by Health Status

	Aim Adjusted Means		Non-Aim Ssp Acos Adjusted Means		Estimate
	Poor Health	Not Poor Health	Poor Health	Not Poor Health	
Performance Year 1					
Getting Timely Care, Appointments, and Information	72.7%	74.6%	-1.9%	-2.8%	0.9%
How Well Your Doctors Communicate	89.4%	93.4%	-4.0%	-3.2%	-0.7%
Patient's Rating of Doctor	90.5%	93.6%	-3.1%	-3.0%	-0.1%
Access to Specialists	83.2%	84.6%	-1.4%	-3.4%	2.0%
Health Promotion and Education	66.5%	62.9%	3.6%	6.7%	-3.1%
Shared Decision Making	64.8%	63.3%	1.5%	4.4%	-2.9%
Performance Year 2					
Getting Timely Care, Appointments, and Information	76.9%	76.9%	0.0%	-1.5%	1.5%
How Well Your Doctors Communicate	94.4%	93.2%	1.2%	-2.2%	3.4%**
Patient's Rating of Doctor	91.4%	92.7%	-1.3%	-2.6%	1.3%
Access to Specialists	82.0%	86.9%	-4.9%	-4.0%	-0.9%
Health Promotion and Education	72.9%	65.0%	7.9%	5.9%	2.0%
Shared Decision Making	68.6%	61.9%	6.7%	5.6%	1.1%

Note: **Indicates statistical significance at 5% level. Poor health is defined as being in the 25th percentile for self-reported functional status.

Source: ACO, PQRS, and MIPS CAHPS beneficiary-level responses for 2015 to 2017 combined with Medicare claims data.

Exhibit 5B-6: Regression-Adjusted Differences in Patient/Caregiver Experience between Beneficiaries Assigned to AIM Test 1 ACOs that Reduced versus Did Not Reduce Hospitalizations, relative to Comparison Non-ACO FFS Beneficiaries in the ACOs' Markets

Outcome	AIM		FFS Comparison		Difference [(1)-(2)] - [(3) (4)]
	Impact Reduced (1)	Impact Not Reduced (2)	Impact Reduced (3)	Impact Not Reduced (4)	
Performance Year 1					
Getting Timely Care, Appointments, and Information	75.6%	76.0%	78.2%	78.2%	-0.5%
How Well Your Doctors Communicate	91.5%	91.8%	91.6%	92.2%	0.3%
Patient's Rating of Doctor	91.1%	91.2%	91.8%	92.0%	0.2%
Access to Specialists	82.6%	84.0%	82.9%	82.2%	-2.0%
Health Promotion and Education	59.0%	59.6%	59.5%	59.6%	-0.5%
Shared Decision Making	63.3%	64.4%	64.7%	63.3%	-2.5%
Performance Year 2					
Getting Timely Care, Appointments, and Information	76.6%	75.1%	77.4%	76.1%	0.2%
How Well Your Doctors Communicate	91.8%	91.8%	91.3%	92.3%	1.0%
Patient's Rating of Doctor	91.6%	91.4%	90.8%	92.5%	1.8%
Access to Specialists	82.7%	83.9%	81.3%	82.9%	0.4%
Health Promotion and Education	61.5%	59.6%	60.3%	63.1%	4.7%
Shared Decision Making	64.8%	62.8%	63.9%	68.5%	6.6%

Note: **Indicates statistical significance at 5% level. In PY1 and PY2, 30 and 29 AIM ACOs, respectively, had point estimates indicating reductions in the probability of using the hospital.

Source: ACO, PQRS, and MIPS CAHPS beneficiary-level responses for 2015 to 2017 combined with Medicare claims data.

Exhibit 5B-7: Regression-Adjusted Differences in Patient/Caregiver Experience between Beneficiaries Assigned to AIM Test 1 ACOs that Reduced versus Did Not Reduce ED Use, Relative and Compared to Non-ACO FFS Beneficiaries in the ACOs' Markets

Outcome	AIM		FFS Comparison		Difference [(1)-(2)] - [(3)-(4)]
	Impact Reduced (1)	Impact Not Reduced (2)	Impact Reduced (3)	Impact Not Reduced (4)	
Performance Year 1					
Getting Timely Care, Appointments, and Information	76.2%	74.4%	78.0%	78.8%	2.6%**
How Well Your Doctors Communicate	91.7%	91.2%	91.7%	91.9%	0.8%
Patient's Rating of Doctor	91.4%	90.5%	91.7%	92.2%	1.4%**
Access to Specialists	83.5%	81.9%	82.5%	83.4%	2.4%
Health Promotion and Education	59.6%	58.1%	59.8%	58.9%	0.5%
Shared Decision Making	63.5%	63.8%	64.3%	64.7%	0.2%
Performance Year 2					
Getting Timely Care, Appointments, and Information	76.5%	75.4%	77.8%	76.7%	0.0%
How Well Your Doctors Communicate	91.7%	92.0%	92.2%	90.8%	-1.7%
Patient's Rating of Doctor	91.4%	91.8%	91.4%	90.7%	-1.0%
Access to Specialists	83.2%	82.6%	82.9%	80.4%	-1.9%
Health Promotion and Education	61.6%	59.3%	62.4%	59.2%	-1.0%
Shared Decision Making	64.4%	63.8%	66.2%	63.1%	-2.5%

Note: **Indicates statistical significance at 5% level. In PY1 and PY2, 28 and 29 AIM ACOs, respectively, had point estimates indicating reductions in the probability of ED use without hospital admission.

Source: ACO, PQRS, and MIPS CAHPS beneficiary-level responses for 2015 to 2017 combined with Medicare claims data.

Exhibit 5B-8: Regression-Adjusted Differences in Patient/Caregiver Experience between Beneficiaries Assigned to AIM Test 1 ACOs that Reduced Ambulatory Care Sensitive Admissions, Relative to Comparison Non-ACO FFS Beneficiaries in the ACOs' Markets

Outcome	AIM		FFS Comparison		Difference [(1)-(2)] - [(3)-(4)]
	Impact Reduced (1)	Impact Not Reduced (2)	Impact Reduced (3)	Impact Not Reduced (4)	
Performance Year 1					
Getting Timely Care, Appointments, and Information	75.5%	76.0%	78.6%	77.6%	-1.4%
How Well Your Doctors Communicate	91.8%	91.2%	91.7%	91.8%	0.7%
Patient's Rating of Doctor	91.3%	91.0%	91.9%	91.8%	0.2%
Access to Specialists	82.9%	83.2%	83.0%	82.3%	-0.9%
Health Promotion and Education	58.9%	59.5%	58.7%	60.9%	1.6%
Shared Decision Making	63.6%	63.6%	63.8%	65.3%	1.6%
Performance Year 2					
Getting Timely Care, Appointments, and Information	76.4%	75.9%	78.2%	76.3%	-1.4%
How Well Your Doctors Communicate	91.8%	91.7%	92.3%	90.5%	-1.7%**
Patient's Rating of Doctor	91.6%	91.4%	92.1%	90.0%	-1.9%**
Access to Specialists	82.9%	83.2%	81.9%	81.1%	-1.1%
Health Promotion and Education	60.9%	60.9%	61.1%	60.2%	-0.9%
Shared Decision Making	64.3%	64.0%	67.3%	61.7%	-5.2%**

Note: **Indicates statistical significance at 5% level. In PY1 and PY2, 25 and 22 AIM ACOs, respectively, had point estimates indicating reductions in the probability of an ambulatory care sensitive hospitalization.

Source: ACO, PQRS, and MIPS CAHPS beneficiary-level responses for 2015 to 2017 combined with Medicare claims data.

Appendix 5C. AIM and ACO Measures of Preventive Health and At-Risk Populations

Exhibit 5C-1: Differences in Estimated Impacts on Depression, Colorectal Cancer, and Mammography Screenings between AIM Test 1 ACOs and Similar Non-AIM SSP ACOs in PY2

ACO Name	Depression screening (ACO #18)		Colorectal cancer screening (ACO #19)		Mammography screening (ACO #20)	
	Difference	>1.96*SD [a]	Difference	>1.96*SD [a]	Difference	>1.96*SD [a]
Carolina Medical Home Network ACO	8.3%	No	-3.5%	No	4.6%	No
IRCCO	-14.7%	No	-15.5%	No	-13.0%	No
Reid ACO	-3.9%	No	-1.7%	No	-6.4%	No
Akira Health of Los Angeles	-21.7%	No	-6.2%	No	-9.3%	No
Texas Rural ACO	-4.2%	No	-14.0%	No	-16.4%	No
Access Care Oklahoma	5.0%	No	-9.2%	No	-4.4%	No
Citrus County ACO	29.2%	No	19.6%	Yes	14.5%	Yes
AmpliPHY of Texas ACO	.	.	.	.	.	.
AmpliPHY of Kentucky ACO	26.2%	No	13.2%	No	-1.5%	No
Winding River ACO	-2.6%	No	13.7%	Yes	-1.5%	No
Prairie Hills Care Organization	20.0%	No	20.2%	Yes	12.5%	Yes
Great Plains Care Organization	21.1%	No	14.5%	Yes	3.4%	No
Mountain Prairie ACO	-15.1%	No	-15.4%	Yes	-10.8%	No
Iowa Rural ACO	-20.1%	No	8.5%	No	3.7%	No
Illinois Rural ACO	-18.0%	No	-8.0%	No	-8.7%	No
Suburban Health ACO 2	-15.7%	No	2.1%	No	-5.5%	No
Indiana Rural ACO	-10.4%	No	8.7%	No	-5.5%	No
Greater Michigan Rural ACO	9.8%	No	0.1%	No	0.4%	No
Southern Michigan Rural ACO	-5.5%	No	5.8%	No	5.5%	No
New Hampshire Rural ACO	0.9%	No	6.5%	No	-3.0%	No
Ohio River Basin ACO	5.6%	No	-8.4%	No	-10.2%	No
Magnolia-Evergreen ACO	-8.0%	No	0.3%	No	-4.2%	No
North Mississippi Connected Care Alliance	6.8%	No	9.7%	No	9.1%	No
Deep South Regional ACO	-21.3%	No	-21.4%	Yes	-24.4%	Yes
Minnesota Rural ACO	19.8%	No	5.8%	No	1.1%	No
Oregon-Indiana ACO	7.8%	No	-4.5%	No	-8.2%	No
Mountain West ACO	-23.9%	No	0.3%	No	-3.4%	No
High Sierras-Northern Plains ACO	0.7%	No	4.3%	No	0.0%	No
Aledade Kansas ACO	25.0%	No	8.6%	No	3.9%	No
Aledade West Virginia ACO	13.7%	No	9.6%	No	5.1%	No
Heartland Physicians ACO	-10.8%	No	9.3%	No	5.4%	No
Alliance ACO	7.9%	No	14.7%	Yes	1.5%	No
Kentucky Primary Care Alliance	22.5%	No	-9.0%	No	-8.9%	No
Aledade Mississippi ACO	10.6%	No	5.5%	No	-4.0%	No
Tar River Health Alliance	30.3%	No	24.2%	Yes	15.9%	Yes

ACO Name	Depression screening (ACO #18)		Colorectal cancer screening (ACO #19)		Mammography screening (ACO #20)	
	Difference	>1.96*SD [a]	Difference	>1.96*SD [a]	Difference	>1.96*SD [a]
Affiliated ACO	20.6%	No	18.8%	Yes	4.8%	No
California ACO	-0.3%	No	-2.8%	No	-4.5%	No
San Juan ACO	-22.4%	No	8.0%	No	1.4%	No
Rocky Mountain ACO	-20.9%	No	-6.2%	No	-6.4%	No
MissouriHealth+	18.1%	No	-11.8%	No	-27.8%	Yes
Beacon Rural Health	32.1%	No	13.2%	No	7.9%	No

Note: Comparison of performance on ACO quality measures for AIM Test 1 ACOs and similar non-AIM SSP ACOs (see **Chapter 4** for selection of non-AIM SSP ACOs). In PY1 and PY2, there were 41 AIM ACOs. In PY2, there were 41 AIM ACOs and 77 non-AIM SSP ACOs. Negative differences represent AIM ACOs performing worse on a particular measure compared to non-AIM ACOs and positive differences represent AIM ACOs performing better on a particular measure compared to non-AIM ACOs.

[b] "Yes" indicates that AIM ACOs impact estimate is greater than 1.96 x standard deviation of the non-AIM SSP ACO average impact estimate and are highlighted in the table.

Exhibit 5C-2: Differences in Estimated Impacts on Diabetes, Hypertension, and Ischemic Vascular Disease Control between AIM Test 1 ACOs and Similar Non-AIM SSP ACOs in PY2

ACO Name	Diabetes poor control (ACO#27)		Hypertension (blood pressure control) (ACO #28)		Ischemic vascular disease control (ACO#30)	
	Difference	>1.96*SD [a]	Difference	>1.96*SD [a]	Difference	>1.96*SD [a]
Carolina Medical Home Network ACO	5.0%	No	1.1%	No	1.0%	No
IRCCO	4.3%	No	-0.4%	No	0.9%	No
Reid ACO	-2.2%	No	2.3%	No	8.8%	No
Akira Health of Los Angeles	7.1%	No	13.8%	Yes	-4.5%	No
Texas Rural ACO	1.1%	No	-10.0%	No	-3.7%	No
Access Care Oklahoma	1.2%	No	5.5%	No	-4.1%	No
Citrus County ACO	-9.9%	No	13.8%	Yes	4.2%	No
AmpliPHY of Texas ACO	.	.	.	.	.	.
AmpliPHY of Kentucky ACO	-8.0%	No	8.2%	No	7.7%	No
Winding River ACO	-2.8%	No	-5.3%	No	1.8%	No
Prairie Hills Care Organization	-4.7%	No	2.4%	No	8.6%	No
Great Plains Care Organization	-8.3%	No	9.9%	Yes	8.6%	No
Mountain Prairie ACO	6.4%	No	-5.9%	No	2.0%	No
Iowa Rural ACO	-1.0%	No	7.7%	No	4.6%	No
Illinois Rural ACO	-0.9%	No	-4.5%	No	2.8%	No
Suburban Health ACO 2	-1.8%	No	3.0%	No	3.2%	No
Indiana Rural ACO	-3.3%	No	-1.5%	No	6.5%	No
Greater Michigan Rural ACO	-0.9%	No	4.0%	No	4.0%	No
Southern Michigan Rural ACO	-3.0%	No	0.3%	No	0.8%	No
New Hampshire Rural ACO	-6.6%	No	3.3%	No	7.0%	No
Ohio River Basin ACO	5.6%	No	2.6%	No	1.9%	No
Magnolia-Evergreen ACO	0.0%	No	0.0%	No	2.8%	No
North Mississippi Connected Care Alliance	-4.3%	No	-10.9%	Yes	4.4%	No
Deep South Regional ACO	4.7%	No	-5.8%	No	-2.3%	No
Minnesota Rural ACO	-5.3%	No	6.7%	No	-0.3%	No
Oregon-Indiana ACO	7.5%	No	0.0%	No	2.5%	No
Mountain West ACO	2.3%	No	-3.5%	No	-0.3%	No
High Sierras-Northern Plains ACO	-2.1%	No	-7.6%	No	-3.2%	No
Aledade Kansas ACO	-6.5%	No	-3.2%	No	4.2%	No
Aledade West Virginia ACO	-2.7%	No	4.9%	No	4.5%	No
Heartland Physicians ACO	-1.6%	No	5.8%	No	-2.0%	No
Alliance ACO	-5.8%	No	4.8%	No	-4.0%	No
Kentucky Primary Care Alliance	2.9%	No	2.3%	No	2.4%	No
Aledade Mississippi ACO	-1.4%	No	-3.1%	No	8.6%	No
Tar River Health Alliance	-6.3%	No	3.6%	No	4.5%	No
Affiliated ACO	-5.8%	No	8.8%	No	4.8%	No

ACO Name	Diabetes poor control (ACO#27)		Hypertension (blood pressure control) (ACO #28)		Ischemic vascular disease control (ACO#30)	
	Difference	>1.96*SD [a]	Difference	>1.96*SD [a]	Difference	>1.96*SD [a]
California ACO	-3.4%	No	1.8%	No	-7.8%	No
San Juan ACO	-3.3%	No	3.2%	No	1.9%	No
Rocky Mountain ACO	-3.3%	No	-0.5%	No	3.6%	No
MissouriHealth+	6.5%	No	1.0%	No	-3.0%	No
Beacon Rural Health	-5.5%	No	10.9%	Yes	3.6%	No

Note: Comparison of performance on ACO quality measures for AIM Test 1 ACOs and similar non-AIM SSP ACOs (see **Chapter 4** for selection of non-AIM SSP ACOs). In PY1 and PY2, there were 41 AIM ACOs. In PY2, there were 41 AIM ACOs and 77 non-AIM SSP ACOs. Negative differences represent AIM ACOs performing worse on a particular measure compared to non-AIM ACOs and positive differences represent AIM ACOs performing better on a particular measure compared to non-AIM ACOs.

[b] "Yes" indicates that AIM ACOs impact estimate is greater than 1.96 x standard deviation of the non-AIM SSP ACO average impact estimate and are highlighted in the table.



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