

Appendix. Medicare Alternative Payment Models That Support Improved Primary Care

Appendix Exhibit 1. Data Sources Used in Analysis

Data files	Use in analysis
Medicare fee-for-service claims	Create outcome measures.
Medicare Beneficiary Summary File and data on Hierarchical Condition Category (HCC) scores	Obtain beneficiaries' ZIP codes and create control variables (for use in regressions) based on the beneficiary's characteristics (e.g., age, gender, estimated race/ethnicity, HCC scores, dual eligibility status, reason for Medicare eligibility) aggregated to the primary care physician (PCP) level.*
Medicare Data on Provider Practice and Specialty	Identify PCPs and create control variables for their age and gender.
Medicare Shared Savings Program Accountable Care Organization provider-level files	Use National Provider Identifiers (NPIs) and Taxpayer Identification Numbers (TINs) to identify PCPs participating in Medicare ACOs.
CMS Innovation Center Model Data Sharing Provider and Entity files	Use NPIs and TINs to identify PCPs participating in other CMS Innovation Center models and initiatives.
Agency for Health Care Research and Quality, Compendium of U.S. Health Systems, group practice linkage files	Use NPIs and TINs to identify PCPs in vertically integrated health systems.
Health Resources and Services Administration Area Health Resources File	Create area-level control variables (for example, Medicare Advantage penetration rate, availability of physicians, availability of hospital beds) based on the predominant county of patients seen by a physician.
U.S. Department of Agriculture rural–urban commuting area codes	Create control variables for rural or suburban location versus urban location based on the predominant ZIP code of patients seen by a physician.
Centers for Disease Control and Prevention's Social Vulnerability Index (SVI)	Use the census tract-level SVI rolled up to the ZIP code level as a control variable based on the predominant ZIP code of patients seen by a physician.

* All beneficiary-level characteristics are aggregated to the PCP level to create control variables that capture the characteristics of the traditional Medicare beneficiaries seen by a PCP. Since the original race/ethnicity information in the Medicare enrollment database (EDB) has significant limitations, including undercounting Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native beneficiaries, we use the RTI race/ethnicity variables available on the Virtual Research Data Center, found to be more accurate than the original EDB variables. (See Celia Eicheldinger and Arthur Bonito, ["More Accurate Racial and Ethnic Codes for Medicare Administrative Data,"](#) *Health Care Financing Review* 29, no. 3 (Spring 2008): 27–42.)

Appendix Exhibit 2. Methodology for Developing APM Categories

Overall Methodology

Authors EH and ER independently categorized each alternative payment model (and, where available, Track — Appendix Exhibit 3 below) based on the type of payment, whether the model exposed participants to financial risk, and the entity which received the payment. These first two characteristics were used to develop the Reform Type Categories ([Exhibit 1 in the issue brief](#)), and the third characteristic was used to develop the Payment Entity Categories (Appendix Exhibit 4 below). After making independent assessments, the authors then met to review the categorizations and resolve any discrepancies by consensus discussion.

Considerations for Reform Type Categories

We were able to identify whether entities (and, potentially, PCPs) participating in the Medicare Shared Savings Program (MSSP) were subject to downside financial risk based on their Track participation and categorized these accordingly. Since all MSSP models represent an adjustment to revenue derived from traditional Medicare fee-for-service (FFS) claims, all these models represented the FFS payment category but differed by whether the participating entity had downside financial risk. Therefore, we assigned PCPs in MSSP Tracks where participating entities had no downside risk to the FFS upside category, while PCPs in models that added downside financial risk were categorized as FFS downside. The Next Generation ACO model allowed participating entities to elect among four payment mechanisms (including traditional FFS, FFS with a per beneficiary per month payment, and population-based payment only); available data did not allow us to specify the payment model selected by participating entities, so we assigned the Next Generation ACO model its own category.

Appendix Exhibit 3. MIPS-Qualifying APMs Included in Analysis

APM	2017	2018	2019	2020	2021	2022
CPC+	X	X	X	X	X	
Global and Professional Direct Contracting Model*					X	X
MSSP ACOs — Track 1	X	X	X	X	X	
MSSP ACOs — Track 1+		X				
MSSP ACOs — Track 2	X	X				
MSSP ACOs — Track 3	X	X				
MSSP ACOs — Basic Track A, B, C, and D			X	X	X	X
MSSP ACOs — Basic Track E			X	X	X	X
MSSP ACOs — Enhanced Track			X	X	X	X
Next Generation ACO Model	X	X	X	X	X	
Primary Care First Model					X	X

* The Global and Professional Direct Contracting Model has been redesigned and renamed the ACO Realizing Equity, Access, and Community Health (ACO-REACH) Model. ACO-REACH began in 2023.

Note: We used information on APM participation in 2016 to develop the sample of eligible PCPs, excluding from our sample any APM participants (TIN–NPI combinations) in the baseline year. Regression analyses controlled for PCP participation in APMs restricted to specific states (the Maryland Total Cost of Care Model, including the Maryland Primary Care Program, and the Vermont All-Payer ACO Model) and PCP participation in the home-based primary care Independence at Home Demonstration (IAH).

Appendix Exhibit 4. APM Groupings Based on Entity to Which Payment Is Directed

Primary care entity-directed payments	ACO entity-directed payments
Primary Care First Comprehensive Primary Care Plus Global and Professional Direct Contracting	Next Generation ACO MSSP Track 1 MSSP Basic A MSSP Basic B MSSP Track 1+ MSSP Track 2 MSSP Track 3 MSSP Basic C MSSP Basic D MSSP Basic E MSSP Enhanced

Note: ACO = accountable care organization; MSSP = Medicare Shared Savings Program.

Appendix Exhibit 5. Description of Access to Care Outcome — “First Contact Care”

For each of the 20 most common reasons for visits to primary care among those age 65 and older, identify patients with an office-based evaluation and management (E&M) claim for the problem in the index year but no E&M claims (either office or non-office-based) for that same problem in the prior 24 months. Use “new problems” defined for each patient to identify for each PCP the degree to which they were the first contact (they provided the index visit) for the new problems observed among the patients the PCP saw during the year. Each year, for all patients seen by a PCP who were identified as having a new problem that year (seen by anyone), calculate the percentage of the visits for which the PCP was the first contact during that calendar year. Each PCP observed is assigned a score ranging from 0 (the PCP was first contact for none of the index visits for new problems observed among the patients the PCP saw during the year) to 1 (the PCP was first contact for all index visits for new problems observed among the patients the PCP saw during the year).

ICD-10 Encounter Codes used to develop First Contact Care measure available on request.

Appendix Exhibit 6. First Contact Care Reliability: Pairwise Correlations over Time

Specialty and year	2016	2017	2018	2019	2020	2021
All PCPs						
2017	0.793	n/a	n/a	n/a	n/a	n/a
2018	0.775	0.802	n/a	n/a	n/a	n/a
2019	0.747	0.769	0.821	n/a	n/a	n/a
2020	0.711	0.729	0.768	0.794	n/a	n/a
2021	0.690	0.709	0.752	0.767	0.793	n/a
2022	0.671	0.688	0.729	0.746	0.754	0.785
General practice						
2017	0.834	n/a	n/a	n/a	n/a	n/a
2018	0.822	0.833	n/a	n/a	n/a	n/a
2019	0.797	0.804	0.835	n/a	n/a	n/a
2020	0.754	0.747	0.774	0.800	n/a	n/a
2021	0.741	0.748	0.774	0.787	0.794	n/a
2022	0.715	0.721	0.748	0.768	0.769	0.805
Family medicine						
2017	0.767	n/a	n/a	n/a	n/a	n/a
2018	0.743	0.768	n/a	n/a	n/a	n/a
2019	0.709	0.730	0.792	n/a	n/a	n/a
2020	0.675	0.691	0.736	0.766	n/a	n/a
2021	0.647	0.667	0.715	0.733	0.763	n/a
2022	0.622	0.638	0.687	0.707	0.717	0.752
Internal medicine						
2017	0.812	n/a	n/a	n/a	n/a	n/a
2018	0.797	0.826	n/a	n/a	n/a	n/a
2019	0.774	0.795	0.843	n/a	n/a	n/a
2020	0.738	0.756	0.792	0.814	n/a	n/a
2021	0.723	0.739	0.778	0.792	0.818	n/a
2022	0.705	0.724	0.759	0.774	0.783	0.810
Geriatrics						
2017	0.854	n/a	n/a	n/a	n/a	n/a
2018	0.831	0.864	n/a	n/a	n/a	n/a
2019	0.775	0.800	0.856	n/a	n/a	n/a
2020	0.722	0.740	0.812	0.818	n/a	n/a
2021	0.722	0.707	0.773	0.771	0.803	n/a
2022	0.729	0.715	0.774	0.767	0.786	0.836

Appendix Exhibit 7. First Contact Care Construct Validity: Variation in First Contact Care Explained by New Problem Management

We regressed PCP scores for first contact care on their scores for new problem management, controlling only for the number of beneficiaries seen by the PCP in each year. Here we report the R² values from those regressions to characterize the variation in first contact care explained by new problem management:

Specialty	2016	2017	2018	2019	2020	2021	2022
All PCPs	0.387	0.355	0.382	0.352	0.326	0.321	0.324
General practice	0.359	0.341	0.344	0.305	0.264	0.243	0.273
Family medicine	0.423	0.389	0.432	0.408	0.379	0.372	0.361
Internal medicine	0.355	0.331	0.347	0.314	0.290	0.288	0.298
Geriatrics	0.287	0.248	0.325	0.268	0.175	0.150	0.213

Appendix Exhibit 8. First Contact Care Construct Validity: Variation in First Contact Care Explained by Primary Care Continuity

We regressed PCP scores for first contact care on their scores for primary care continuity, controlling only for the number of beneficiaries seen by the PCP in each year. Here we report the R² values from those regressions to characterize the variation in first contact care explained by primary care continuity:

Specialty	2016	2017	2018	2019	2020	2021	2022
All PCPs	0.552	0.449	0.450	0.424	0.410	0.387	0.382
General practice	0.574	0.509	0.505	0.495	0.442	0.439	0.451
Family medicine	0.569	0.462	0.468	0.435	0.413	0.395	0.378
Internal medicine	0.544	0.452	0.450	0.429	0.425	0.395	0.396
Geriatrics	0.440	0.404	0.419	0.446	0.243	0.280	0.364