CMMI Data Provision Study

FINAL REPORT

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Project Officer: Shannon O'Connor, PhD

Prepared by:
Kennell and Associates, Inc.

Martin Cohen, Project Director
Sarah Irie
Allison Russo
Veronika Pav
David Kennell
Christina Superina
Geof Hileman
Blein Yohannes

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List of Acronyms

ACO	Accountable care organization
ALOS	Average length of stay
APCD	All-payer claims database
APM	Alternative payment model
BPCI	Bundled Payments for Care Improvement
BSG	Business Services Group
CBO	Community-Based Organization
CCLF	Claim and Claim-Line Feed
CCTP	Community-based Care Transitions Program
CCW	Chronic Conditions Warehouse
CEC	Comprehensive ESRD Care
CJR	Comprehensive Care for Joint Replacement
CMS	Centers for Medicare & Medicaid Services
CMMI	Center for Medicare and Medicaid Innovation
COBA	Coordination of Benefits Agreement
CPC	Comprehensive Primary Care
DRA	Data Request and Attestation
DUA	Data Use Agreement
ED	Emergency department
EFT	Electronic file transfer
EHR	Electronic health record
EPPE	Enterprise Privacy Policy Engine
ESCO	ESRD Seamless Care Organization
ESRD	End stage renal disease
FAI	Financial Alignment Initiative
FAQ	Frequently Asked Questions
FFS	Fee for service
FQHC APCP	Federally Qualified Health Center Advanced Primary Care Practice
HCIA	Health Care Innovation Awards
HIPAA	Health Insurance Portability and Accountability Act
HHVBP	Home Health Value-Based Purchasing
IAH	Independence At Home
IBNR	Incurred but not reported
LDG	Learning and Diffusion Group
LDO	Large Dialysis Organization
LNA	Learning needs assessment
MACRA	Medicare Access and CHIP Reauthorization Act
MAPCP	Multi-Payer Advanced Primary Care Practice

MCCM	Medicare Care Choices Model
MMCO	Medicare-Medicaid Coordination Office
MMDI	Medicare-Medicaid Data Integration
MMP	Medicare-Medicaid Plan
MSA	Metropolitan statistical area
NCQA	National Committee for Quality Assurance
NGACO	Next Generation Accountable Care Organizations
OCM	Oncology Care Model
PAC	Post-acute care
PCMH	Patient-centered medical home
PII	Personally identifiable information
PHI	Protected health information
POC	Point of contact
QE	Qualified Entity
ResDAC	Research Data Assistance Center
RFI	Request for Information
RLF	Regional learning faculty
SNF	Skilled nursing facility
SDRC	State Data Resource Center
SIM	State Innovation Models
TA	Technical assistance
VRDC	Virtual Research Data Center

EXECUTIVE SUMMARY

CMS's Center for Medicare and Medicaid Innovation (CMMI) is testing numerous innovative health care payment and service delivery models that have the potential to lower health care costs while maintaining or improving quality. To improve prospects for success, CMMI has been providing data to model participants such as physician practices, hospitals, accountable care organizations (ACOs), and state governments. Model participants can benefit from receiving and using these data to identify opportunities for improvement and to monitor their performance.

Actual usage of the CMS data by model participants has been mixed, however. The factors affecting participants' usage of the data are also mixed, and vary by initiative and among participants within an initiative. Because the actual usage of the data has been mixed, it is important for CMMI and other stakeholders to learn what can improve the value and impact of data provided to participants in current and future innovation models.

This study aimed to develop a more systematic understanding of the factors contributing to model participants' use and non-use of CMMI-provided data – specifically what has worked well in providing data to model participants and what could be improved to make data provision more valuable. This study is based on qualitative analysis of experience to date with data provision and related technical assistance (TA) in 18 CMS models, as listed in ***Exhibit ES-1***.

Exhibit ES-1. CMS Models Included in the Data Provision Study

1. Bundled Payments for Care Improvement (BPCI)
2. Community-based Care Transitions Program (CCTP)
3. Comprehensive Care for Joint Replacement (CJR)
4. Comprehensive ESRD Care (CEC)
5. Comprehensive Primary Care (CPC)
6. Federally Qualified Health Center Advanced Primary Care Practice (FQHC APCP)
7. Financial Alignment Initiative (FAI)
8. Health Care Innovation Awards (HCIA) Round 1
9. Health Care Innovation Awards (HCIA) Round 2
10. Home Health Value-Based Purchasing (HHVBP)
11. Independence At Home (IAH)
12. Medicare Care Choices Model (MCCM)
13. Multi-Payer Advanced Primary Care Practice (MAPCP)
14. Next Generation Accountable Care Organizations (NGACO)
15. Oncology Care Model (OCM)
16. Pioneer Accountable Care Organizations
17. State Innovation Models (SIM) Round 1
18. State Innovation Models (SIM) Round 2

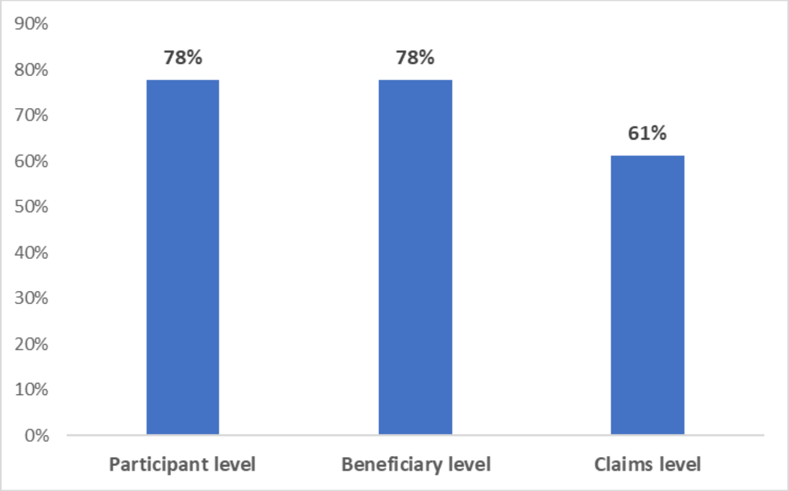
Our methodology consisted of three steps. First, we collected and analyzed a wide range of existing data from the model teams regarding provision of data and related TA, such as sample feedback reports, model evaluation reports, learning system products, available statistics on the number of model participants who requested or accessed CMS data, and existing surveys of participants. Second, we identified potential key informants among CMS staff and contractors involved with data provision, learning support, and model evaluation, and conducted interviews with them. We then used these secondary and primary data to develop findings and recommendations.

What types of data were provided to model participants?

Our analysis of the types of data and reports provided to model participants identified important findings on a range of content and design decisions.

Types of data – Most models provided a combination of data files to participant organizations, including a participant-level feedback report, with aggregate data for the entity formally responsible for performance in the model, in addition to more granular data files at the beneficiary- or claims-level, as indicated in ***Exhibit ES-2***. A few models, however, only provided one level of data – either a participant-level feedback report or a claims-level extract. The aggregate data in participant-level reports often included patient demographics, key utilization measures (e.g., hospitalization rates per thousand, average length of stay (ALOS), readmission rates, emergency department (ED) visit rates), cost of care for major categories of service, and quality measures. Beneficiary-level files summarized information for individual, identifiable beneficiaries. Claims-level data files provided participants with a large amount of information and flexibility, but required much work and data sophistication on the part of the user.

Exhibit ES-2. Level of Data Provided to Model Participants, by Percent of Models (N=18)



Note: Percentages sum to more than 100% because many models provide more than one type of data.

Format – For participant-level feedback reports, PDF and Excel formats were both common. Models typically chose a PDF format for reports that included significant text to explain the data. An Excel format, which was also common for beneficiary-level data, gave participants more flexibility to interact with the data. Several ACO models have also included online data dashboards, with interactive features such as data filters and user-friendly chart creation. We found there was not a single, “correct” answer for how much content to include (e.g., report length) or the right balance of visuals versus text, due to heterogeneity in model participants’ expertise and needs. A few recent models, however, have focused on a “less is more” approach for participant-level feedback data, with downloadable dashboard formats that emphasize tables and charts.

Frequency and time lag – Participant-level feedback reports were typically provided quarterly, while beneficiary- and claims-level data were typically provided quarterly or monthly. Some model participants complained about timeliness and desired near-real-time data reports. However, claims data matures over time, because some claims are not received or fully processed until months after the date care was delivered. This claims lag inherently creates a trade-off between timeliness and completeness. Recent models have tended to opt for more timely data over more complete data for feedback reports, often by not waiting for as much claims run-out. Some model teams have also tailored decisions on this trade-off by reserving a longer claims run-out period for participant-level feedback reports, while using less (or no) run-out on beneficiary-level data and no run-out on claims-level data.

Comparison data for benchmarking – Participants highly valued peer comparisons, as long as these comparisons were risk-adjusted for patient case mix. For interim feedback purposes (rather than administering model results), some models opted for a simplified risk adjustment methodology to avoid adding more time lag to the report. The most typical comparison was to the average, risk-adjusted performance of all participants in the model, but some models have used an interactive dashboard format that allowed additional comparisons (e.g., 25th, 50th, and 75th percentiles, before and after risk adjustment).

Censoring of claims with sensitive diagnoses – Current federal policy that requires exclusion of claims for treatment of substance use disorders when sharing patient-identifiable data decreased the value of providing beneficiary- or claims-level data in some models.[1] Most notably, this censoring in the data meant that participants who wanted to use the data to identify or manage complex, high-need patients were missing key information on patients who might benefit a great deal from care coordination.

Dealing with small sample sizes – For participating organizations with a small number of Medicare patients reflected in their feedback data, small sample sizes in data reported quarterly posed a

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[1] This refers to constraints on the sharing of some types of data related to treatment of substance use disorders, as required under 42 CFR Part 2. For further information, see: https://www.samhsa.gov/laws-regulations-guidelines/medical-records-privacy-confidentiality#records-privacy.

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risk of data volatility and misinterpretation of quarterly trends by the user. One solution adopted by some models was to report moving averages of the most recent four quarters rather than reporting individual quarters. A trade-off in this approach, however, is that model participants could not easily see their experience in the most recent quarter or two – e.g., if an organization hoped to see early results from a new quality improvement initiative.

Key Considerations for data content and design:

- *Subject to resource constraints or other specific circumstances in a model, providing multiple types and levels of data gives participants the flexibility to use the data according to their capabilities and needs.*
- *For participant-level feedback reports, consider downloadable, dashboard-like formats that emphasize tables and charts and that give users flexibility to interact with the data. However, for both format and length, there is heterogeneity in what participants want and in what may work best for a given model.*
- *Regarding the timing for data provision, model teams will need to find the right balance among: 1) production time and resources, 2) whether expected uses of the data favor timelier over more complete data, and 3) how frequently participants can process new data.*
- *Model participants like seeing how their performance compares to other participants in the model, after risk-adjusting for potential differences in patient case-mix.*

How were data disseminated to model participants?

Two key steps in the data dissemination process are: 1) the process of authorizing model participants to have access to data, and 2) distributing the data to the authorized recipients.

Regarding the process to authorize model participants to have access to data, key findings include:

- Identifying the appropriate points of contact (POCs) for data within each model participant’s organization was important, but often difficult. Identifying the right POCs facilitated the model team’s outreach about the data, such as announcing release of a new round of data or changes to the data. Identifying appropriate POC(s) could be especially time-consuming in mandatory models, since CMMI might have reach out to organizations covered by the model rather than receiving contact information as part of an application to join the model.
- Several models (e.g., CJR, OCM, NGACO) used a Data Request and Attestation (DRA) approach as a streamlined alternative to a traditional Data Use Agreement (DUA).
- In the models in this study that did not develop and provide a standardized set of data files (HCIA Rounds 1 and 2, SIM Rounds 1 and 2, and the claims data provided to states in FAI), the data request process was time-consuming for participants, and they needed significant TA in preparing their requests (e.g., identifying precisely what data files or fields they needed).

Regarding distribution of data to authorized recipients, key findings include:

- Secure web portals were by far the most common method for making data available to model participants. Benefits of this distribution mode included data security, efficiency, and scalability.
- Despite the usefulness of web portals, several issues have detracted from overall effectiveness:
  - Model participants often required significant start-up assistance with user accounts and learning how to use the portal.
  - After their data portals were designed, model teams often realized that additional capabilities would have been useful, but it was not always feasible to add these features later.
  - A requirement for passwords to change every 60 days for web portals distributing sensitive data, while understandable from a security perspective, often meant that a new password was required every time a quarterly set of reports was released.
  - Participants in several models have complained about the number of separate websites that they must access for different purposes. For example, a typical set of websites in a model might include a site for downloading or submitting data, a Connect site for the learning system, and another site for exchanging confidential documents related to model participation.

Key considerations for dissemination of data:

- *The data POC(s) usually should be the staff member(s) who will actually be accessing the data – often not the individual responsible for other aspects of the organization's participation in the model.*
- *To maintain lists of authorized data users over the course of the model, it can be efficient to periodically send each participating organization a list of users to confirm/update.*
- *It may be helpful for CMMI to increase model teams' awareness of the Data Request and Attestation approach as a potential, streamlined alternative to a traditional Data Use Agreement, depending on model circumstances.*
- *CMMI's Business Services Group (BSG) urges model teams to reach out early for help planning IT requirements, as some data portals can require more than 12 months to develop.*
- *When planning a data portal, two helpful capabilities to include are: 1) routine reporting on model participants accessing their files, and 2) space for ongoing access to earlier data cycles.*
- *It could also be helpful, when feasible, to reduce the number of websites in a model that a given individual might have to access with different user accounts, by establishing a single log-in entry point (depending on security requirements or other factors).*

How much prior data expertise did model participants have?

The models included in this study differed significantly in terms of the type of organizations receiving data as model participants (e.g., physician practices, hospitals, ACOs and health plans, home health agencies, hospices, state governments). These differences created considerable heterogeneity across models concerning participants' initial capacity to work with data. As an example of advanced data capacity, ACOs in Pioneer and NGACO commonly implemented data warehouses that integrated claims data with clinical data from electronic health records (EHRs) to produce a range of internal data reports. In contrast, in one of the primary care physician models, one reason the model selected a PDF file format for its practice-level feedback report was a concern that some practices might not have a computer with Microsoft Excel installed.

We also found wide variation in data capacity among participants within most models. Within a given model, larger organizations or those participants affiliated with a larger parent organization tended to have more data expertise than smaller or independent participants. However, sometimes even small organizations, such as a small physician practice, could be quite advanced in use of data due to the interests or skill-set of a specific individual. Differences in data capacity based on organizational size or affiliation were especially evident in models that provided claims-level data, given the challenges in working with these large, complex data files. In several models, a substantial number of participants hired consultants to supplement their capacity to work with the data.

Key considerations regarding model participants' level of data expertise:

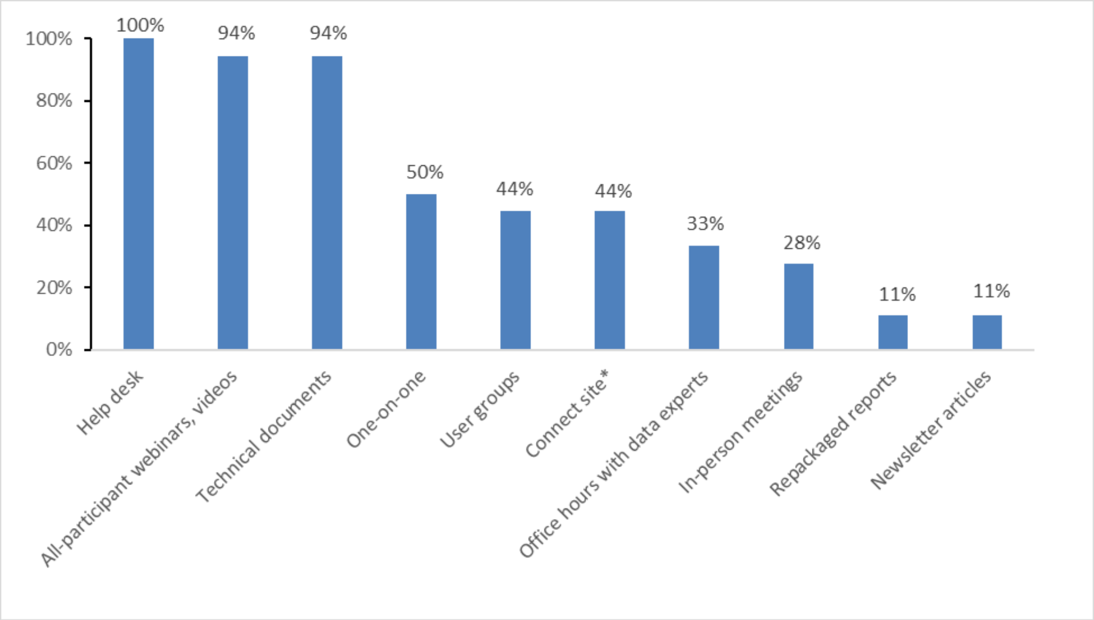
- *The heterogeneity in participants' level of data expertise drives a need for substantial and varied learning support related to the data provided.*
- *Model teams can consider communicating to participants the value of making an early self-assessment of whether the participant's internal data expertise is likely to be sufficient to take advantage of the data and TA available from CMS, or whether support from a parent organization or consultants may be needed. Such a self-assessment can be particularly valuable in models providing claims-level data.*

What types of data-related TA were provided?

Key informants widely agreed that providing data without training is not effective. Common topic areas for which training was needed included: how to request data (especially in models that do not provide standardized reports or files), how to access the data, how to interpret feedback reports, how to work with claims-level data, and how to use the data.

Providing a few initial webinars and technical guide documents is unlikely to suffice, and many models delivered a range of ongoing learning activities and TA resources to support data provision, as indicated in ***Exhibit ES-3***. Peer-to-peer learning, which can occur in various types of TA activities including webinars, user groups, in-person meetings, and discussion threads on the Connect website, was widely viewed as popular and effective in helping participants identify and overcome challenges in working with and using the data. However, model participants also valued access to CMMI's data experts for specific technical questions, which could be facilitated with "office hours" events.

Exhibit ES-3. Types of TA/Learning Activities to Support Data Provision, by Percent of Models (N=18)



* The Connect site is a CMS Innovation Center online knowledge management and collaboration platform.

Given the heterogeneity within a model concerning participants' initial capacity to work with the data, as well as possible divergence over the course of implementation, it is important to look for opportunities to tailor TA for recipients' different levels of data sophistication and interests.

Model teams varied in the level of internal communication that occurred between the CMMI contractor(s) involved in producing data for model participants and the learning system contractor. Key informants in several models reported that such communication was helpful for sharing and discussing possible refinements to data provision or related training.

Key considerations regarding training and other TA related to data provision:

- *Offering early TA activities and resources can support initial engagement with the data, while continued assistance over time can support participants who are not ready to engage with feedback data until later in the model. Also, those engaging early will have evolving needs as they work with the data.*
- *A key question is whether, or how much, a model should assist participants in learning to use the CMS data in their operational workflows and decision-making, relative to participants relying on*

their own resources or consultants. Peer-to-peer learning can be particularly effective in this area.

- *Opportunities for peer-to-peer learning can include user groups, presentations by high performers, in-person meetings, and discussion threads on the Connect site.*
- *More tailored, but resource-intensive, TA can be provided with one-on-one assistance, such as help in requesting data, a one-on-one call to walk through a participant's feedback report, or use of the data in practice-coaching sessions.*
- *Periodic assessments that solicit participants' views on specific data-related learning needs can inform refinements to TA over the course of the model.*
- *It can be helpful for model teams to encourage periodic meetings that include the contractor(s) producing data for model participants and the learning system contractor to discuss possible refinements to the data and/or related TA.*

What was the uptake of the data, and what were reasons for use or non-use?

There was considerable variation among models in the uptake of feedback reports and other data files, as shown in ***Exhibit ES-4***. Factors that contributed to higher data uptake included:

- financial or other strong incentives for participants to track their performance,
- high levels of data-related learning support, and
- recipients' perceptions that data were useful and actionable.

Providing extensive training did not guarantee that participants would use the data provided to them, but without such training they were unlikely to use the data. Uptake of more granular data, especially claims-level data, was higher when model participants had the expertise to work with this richer, but more challenging data. Refining data provision in response to feedback also promoted uptake.

Common uses of the CMS data, which were largely consistent with CMMI's expectations, included: performance monitoring, identifying patients in need of care coordination, identifying opportunities for quality improvement, confirming aligned patients, analyzing patients' utilization outside the participant organization, and attempting to validate or predict financial results. ***Common reasons for non-use, or less use,*** included: time lag, the size or complexity of some reports or files, exclusion of data on treatment of substance use disorders, lack of resources and guidance on how to work with and use the data, small sample sizes, and lack of aggregated multi-payer data.

Key considerations for increasing uptake and usefulness of the data:

- *Models can consider providing early education to participants on both the limitations and the strengths of claims-based data. Sharing illustrative uses can stimulate participants' planning.*
- *Uptake of data tends to be higher when participants have some form of accountability.*

- *In models with significant multi-payer involvement, aggregated multi-payer data are more useful to participants. However, data aggregation requires significant collaboration and investment by payers. Alignment of data specifications and formats can be a less difficult step, although then users still have to deal with separate reports or files from each payer.*
- *Soliciting feedback about the data and making refinements can also make the data more useful.*

1. Introduction

CMS's Center for Medicare and Medicaid Innovation (CMMI) is testing numerous innovative health care payment and service delivery models that have the potential to lower health care costs while maintaining or improving quality. The innovation models are attempting to change the behavior of health care providers and organizations, such as physician practices, hospitals, and accountable care organizations (ACOs). To improve prospects for success, CMMI has been providing data to model participants (e.g., ACOs, states). Model participants can benefit from receiving and using these data to identify opportunities for improvement and to monitor their performance.

Actual usage of the CMS data by model participants has been mixed, however. The factors affecting participants' usage of the data are also mixed, and vary by initiative and among participants within an initiative. Because the actual usage of the data has been mixed, it is important for CMMI and other stakeholders to learn what can improve the value and impact of data provided to participants in current and future innovation models.

This study aimed to develop a more systematic understanding of the factors contributing to model participants' use and non-use of CMMI-provided data – specifically what has worked well in providing data to model participants and what could be improved to make data provision more valuable. ***Exhibit 1-1*** presents the specific study questions addressed.

Exhibit 1-1. Study Questions

1. What types of data are being provided? In what formats?
2. How are the data disseminated?
3. Who are the recipients? What is their previous experience using data?
4. What are the recipients expected to do with the data? How do they actually use the data?
5. What types of technical assistance (TA) are being provided to data recipients to help them understand and use the data? How is TA tailored based on recipients' previous experience with data? Which methods of TA for data usage are effective or not effective and why?
6. How are data recipients encouraged to use the data? Which methods of encouragement are effective or not effective and why?
7. What are the data uptake rates for each model and for each type of data provision? What factors explain differences in uptake?
8. Beyond uptake rates, what reasons are given for use and non-use of the data? What factors contribute to use or non-use?
9. Based on the findings of the study, how should CMMI proceed in terms of providing data and related TA in the future? How might these recommendations differ by model type, target audience, etc.?

1.1 Background on the models included in this study

This study is based on qualitative analysis of experience to date with data provision and related TA in 18 CMS models, as listed in ***Exhibit 1-2***.[2] CMMI selected these models for the study because CMMI was involved in administering the model, feedback data were being provided to participants, and an independent evaluation of the model had been conducted or was underway. The 18 models also reflect a broad mix in terms of model focus, number and type of participants, and period of performance.

Although all 18 models are broadly designed to improve the delivery of care, the approaches and characteristics of the models differ. ***Exhibit 1-2*** provides a brief overview of each of the models included in this study, including three main characteristics:

- **Focus** – There are important differences in the focus, objectives, and types of interventions for each model. For example, some are aimed at transforming primary care (e.g., CPC, FQHC APCP, IAH, MAPCP), while others are more oriented to payment reforms such as episode-based models (e.g., BPCI, CJR, OCM). These differences in focus provide necessary context for understanding data provision in each model.
- **Period of performance** – It is useful to know the stage at which each model is currently. Some older models (e.g., BPCI, FQHC APCP, MAPCP) provided valuable early lessons about data provision that may have influenced subsequent models. A few models, such as CJR, HHVBP, MCCM, and OCM, launched more recently and, therefore, data provision and related TA may continue to evolve. Participants' uptake of the data in newer models also may increase over time. In newer models, while their experience with data provision may be more limited, they have the most recent decision-making experience related to data provision and associated TA.
- **Participants** – In this report, we defined model participants as the entities who were formally responsible for implementation of, and performance in, a given model. In many models, the participants were a type of health care provider (e.g., hospitals, physician practices, home health agencies (HHAs), or hospices). In some models, however, the participants were higher-level organizations or entities that either incorporated or worked with a variety of provider types (e.g., ACOs, health plans, state governments, or a wide range of HCIA awardees).

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[2] The study's original statement of work listed 19 models. CMMI subsequently determined that one model, Medicare Advantage Value-Based Insurance Design (MA-VBID), had not matured enough, particularly regarding provision of data to participants, to be included in the study.

Exhibit 1-2. Description of Models Included in the CMMI Data Provision Study*

Model name	Focus	Period of performance	Participants
Bundled Payments for Care Improvement (BPCI)	Episode-based payment for acute care hospital stays and post-acute care (PAC); tests four alternative models	Oct 2013 - Sep 2018	As of January 2017, 286 awardees (227 who can "initiate" episodes and 59 who are non-initiating awardee conveners); an additional 1,075 provider entities participate as episode-initiator partners of awardees; in total 1,302 participants can initiate episodes (of which 340 are acute care hospitals, 620 skilled nursing facilities (SNFs), 252 physician group practices, 81 home health agencies (HHAs), and 9 inpatient rehabilitation facilities)
Community-based Care Transitions Program (CCTP)	Adoption of best practices for care coordination as high-risk Medicare beneficiaries transition from inpatient hospital stays to home or other care settings	Feb 2012 - Jan 2017	47 Community-Based Organization (CBO) awardees through 2012, expanded to a peak of 101 awardees in 2013, fell to 18 by the end of the model; of the 47 earlier awardees, 36 were an Area Agency on Aging, an Aging/Disability Resource Center, or both; the other 11 were hospitals, community coalitions, or other entities; CBOs partnered with local hospitals
Comprehensive Care for Joint Replacement (CJR)	Episode-based payment for hip and knee replacements (lower extremity joint replacement)	Apr 2016 - Dec 2020	Was launched as a mandatory model covering approximately 800 acute care hospitals in 67 metropolitan statistical areas (MSAs), but a rule published in Nov. 2017 reduced the number of mandatory MSAs and made the model opt-in for hospitals not in mandatory MSAs and for low-volume and rural hospitals
Comprehensive ESRD Care (CEC)	Accountable care for patients with end-stage renal disease (ESRD)	Oct 2015 - Dec 2020	37 ESRD Seamless Care Organizations (ESCOs), including 33 Large Dialysis Organizations (LDOs) owned by 3 chains and 4 non-LDOs
Comprehensive Primary Care (CPC)	Primary care practice transformation	Oct 2012 - Dec 2016	439 primary care practices (as of Dec. 2016) in 7 geographic regions; 36 payers
Federally Qualified Health Center Advanced Primary Care Practice (FQHC APCP)	Primary care transformation among FQHCs – focused on National Committee for Quality Assurance (NCQA) recognition as a Level 3 patient-centered medical home (PCMH)	Nov 2011 - Oct 2014	Started with 503 FQHCs; fell to 434 FQHCs by the end of the model
Financial Alignment Initiative (FAI)	Testing models for integration of services and financing for Medicare-Medicaid dual eligible beneficiaries	Jul 2013 - Dec 2020	13 states (CA, CO, IL, MA, MI, MN, NY, OH, RI, SC, TX, VA, WA); including 10 states with capitated Medicare-Medicaid Plans (MMPs)
Health Care Innovation Awards (HCIA) Round 1	Development and testing of new payment and delivery models for a diverse range of awardees	Jun 2012 - Jun 2016	107 awardees, including academic medical centers, non-profit agencies, health plans, and other entities focused on behavioral health / substance abuse services (10 awardees), complex/high-risk patients (23), community resources (24), patients with specific diseases (18), hospital services (10), shared decision-making and medication management (9), or primary care redesign (13)

Model name	Focus	Period of performance	Participants
Health Care Innovation Awards (HCIA) Round 2	Development and testing of new payment and delivery models for a diverse range of awardees	Sep 2014 - Apr 2018	39 awardees, including academic medical centers (16 awardees), non-profit or local public agencies (13), managed care organizations or integrated health systems (6), or other entities (4)
Home Health Value-Based Purchasing (HHVBP)	Testing a quality-based payment model for Medicare-certified HHAs	Jan 2016 - Dec 2020	All Medicare-certified HHAs in 9 states (AZ, FL, IA, MA, MD, NE, NC, TN, WA); approximately 1,800 HHAs (as of Oct. 2017)
Independence at Home (IAH)	Testing home-based primary care for high-need Medicare beneficiaries	Jun 2012 - Sep 2017	14 home-based primary care practices, including 13 independent practices and 1 consortium of practices
Medicare Care Choices Model (MCCM)	Testing a payment model allowing hospice-eligible Medicare beneficiaries to choose to receive both hospice services and curative care.	Jan 2016 - Dec 2020	100 Medicare-certified hospices (as of Oct. 2017), including 53 that started in Jan. 2016 as cohort 1 and 47 starting Jan. 2018 as cohort 2
Multi-Payer Advanced Primary Care Practice (MAPCP)	State-sponsored initiative to transform primary care practices	Jul 2011 - Dec 2016	More than 800 primary care practices and community health teams in 8 states (VT, ME, NC, RI, NY, PA, MI, MN)
Next Generation Accountable Care Organizations (NGACO)	Testing accountable care through a financial risk model	Jan 2016 - Dec 2020	44 ACOs (as of Oct. 2017) representing a variety of provider organizations and geographic areas (including 18 NG ACOs that began participation on January 1, 2016)
Oncology Care Model (OCM)	Episode-based payment for oncology physician practices administering chemotherapy	July 2016 - June 2021	Approximately 190 oncology physician practices and 14 payers (as of Oct. 2017)
Pioneer Accountable Care Organization	Accountable Care through financial risk model	Jan 2012 - Dec 2016	Began with 32 ACOs and concluded with 19 through Program Year 4 (2015) and 8 by the end of Program Year 5 (2016) (with some transitioning to the NGACO model)
State Innovation Models (SIM) Initiative Round 1	Design and testing of state-led plans for alternative payment and delivery models	Apr 2013 - Sep 2016	25 states (AR, CA, CO, CT, DE, HI, ID, IL, IA, ME, MD, MA, MI, MN, NH, NY, OH, OR, PA, RI, TN, TX, UT, VT, WA), 6 of which were awarded Model Test Awards (AR, ME, MA, MN, OR, VT)
State Innovation Models (SIM) Initiative Round 2	Design and testing of state-led plans for alternative payment and delivery models	Feb 2015 - Jan 2019	32 awardees, including 28 states (AZ, CA, CO, CT, DE, HI, ID, IL, IA, KY, MD, MI, MT, NV, NH, NJ, NM, NY, OH, OK, PA, RI, TN, UT, VA, WA, WV, WI), , 3 territories (American Samoa, Northern Marianas, and Puerto Rico), , and the District of Columbia (DC), 11 of which were awarded Model Test Awards (CO, CT, DE, ID, IA, MI, NY, RI, OH, TN, WA)

* Additional background information on each model can be found at: https://innovation.cms.gov/initiatives/index.html#views=models

1.2 Methodology and data

Our methodology consisted of three steps:

- First, we collected and analyzed a wide range of existing data from the model teams regarding provision of data and related TA. Examples include feedback reports, model evaluation reports, learning system products, available statistics regarding the number of model participants who have requested or accessed data from CMS, and existing surveys of participants.

- Second, we identified potential key informants among CMS staff and contractors involved with data provision, learning support, and model evaluation. We then conducted 55 semi-structured interviews with key informants and coded the resulting interview data.
- Third, we synthesized our analyses of the interview data and the existing data we collected from the model teams to conduct a thematic analysis. We used these data to develop findings and recommendations.

We cast a wide net in requesting secondary data from model teams and CMMI's Learning and Diffusion Group (LDG). Examples of the range of existing data we collected include:

1. model evaluation reports, to conduct content analysis of any sections dealing with data provision or related learning activities/TA, as well as to gain general background and context for each model;
2. CMS or contractor reports or memoranda concerning design or implementation of data provision or related TA (e.g., learning needs assessments (LNA));
3. sample copies of data reports;
4. technical guides accompanying the data reports;
5. copies of data-related webinar materials (e.g., slide decks, transcripts, recordings) that had been delivered to model participants;
6. attendance counts collected by LDG for learning system events;
7. access to online knowledge management and collaboration sites (i.e., the Connect sites) that support many of the models;
8. surveys of model participants, which existed for some models, regarding the data or TA provided by CMS;
9. available statistics regarding the number of model participants requesting or accessing data from CMS; and
10. data available from helpdesks that supported model participants' use of CMS data (e.g., the number and types of queries received over time).

Regarding our primary data collection, the purpose of the 55 interviews was to fill gaps in our knowledge (after our preliminary analysis of the secondary data) and to elicit additional insights from individuals directly involved with provision of data and related TA in these models. We identified potential key informants among CMS staff and contractors in consultation with the model teams. Many of the interviews included more than one individual, and, as a result, the 55 interviews included a total of almost 100 individuals serving as key informants.

For each interview, we used semi-structured interview protocols in which some questions were tailored for each specific interview based on the data we had already collected and the circumstances of each model. We produced transcripts of each interview for coding purposes, and then coded each transcript using Nvivo 11. ***Appendix B*** provides details of this coding process, including our codebook and a description of our test for inter-coder reliability.

We did not collect primary data directly from model participants because we determined that our other data collection activities provided sufficient information to address the study questions, without burdening model participants who already provide a great deal of information to CMMI for model administration and evaluation. Our interviews with CMS staff and contractors asked about feedback obtained from model participants, either formally or informally, regarding the data provided and related training. The key informants we interviewed relayed a wide range of comments. In addition, for most of the models, we were able to obtain existing data that directly reflected model participants' views on issues of interest. These data sources included model evaluation reports that drew on interviews and/or surveys of model participants, other surveys of model participants specifically focused on feedback reports, LNAs, more informal interactions between CMS staff or contractors and model participants, comments expressed as part of peer-to-peer presentations on use of data, and state governments' responses to a CMS Request for Information (RFI) on experience in the SIM model.

The types of data provision covered in our study scope, as defined by CMMI, did not include model evaluation results or findings that CMMI has sometimes shared informally with model participants, such as quarterly evaluation reports that some model evaluations provided to CMMI on an interim basis along with annual and final reports. Also, we focused on the Medicare data that CMS provided to model participants; our review did not include Medicaid or commercial payer data that were sometimes shared in multi-payer models.

1.3 Structure of this report

Chapters 2-6 address the study questions presented above in ***Exhibit 1-1***:

- ***Chapter 2*** addresses the types of reports and data provided – content, format, frequency, and related design issues (study question 1).
- ***Chapter 3*** addresses how the data are disseminated to model participants (study question 2).
- ***Chapter 4*** addresses characteristics of the recipients, including their prior experience using data (study question 3).
- ***Chapter 5*** addresses data-related TA (study question 5).
- ***Chapter 6*** addresses the topics of data use, how different models have encouraged use of the data, and reasons that drive use or non-use (study questions 4, 6, 7, and 8).

Each of these chapters also present key points to consider as CMMI moves forward in providing data and related TA, which addresses study question 9. ***Chapter 7*** then concludes the report with a few high-level considerations for CMMI.

These chapters focus predominantly on cross-cutting findings across the models, or subsets of the models, by study question and topic. However, there is also value in highlighting findings specific to each model, in part because these model-specific findings helped to illustrate and support the cross-cutting themes. Therefore, ***Appendix A*** provides brief reports with key findings presented for each of the models. ***Appendix B*** provides additional detail on our interview coding methodology.

2. Types of Data Provided and Related Design Issues

We identified six broad topic areas regarding the types of data provided, formats, and other data content or design issues across the models:

- types of data,
- file format and file capability,
- frequency and claims lag,
- inclusion of benchmarks,
- censoring claims with sensitive diagnoses and dealing with small sample sizes, and
- responsibility within the model team for producing the data.

We developed lessons learned regarding each of these topics. ***Exhibit 2-6*** also provides a summary of the data types and formats by model, and additional detail is available in ***Appendix A***.

Key Findings

- *Most models provided a combination of data, including a participant-level summary feedback report and more granular beneficiary- or claims-level data. Content often included patient demographics, key utilization measures (hospitalizations, emergency department visits, etc.), cost of care, and quality measures.*
- *For participant-level reports, a PDF file format was often viewed as most accessible for a wide range of users and allowed more text to explain the data (when needed). An Excel format, however, allowed interactivity and was especially common for beneficiary-level data files.*
- *Participant-level feedback reports were typically provided quarterly, while beneficiary- and claims-level data were typically provided quarterly or monthly (although sometimes less often). Recent models tended to opt for timelier data over completeness for interim feedback reporting.*
- *Model participants valued peer comparisons, although risk-adjusting the data was important to address concerns about patient case-mix.*
- *Some models reported data as four-quarter moving averages, because they were concerned about small sample sizes creating too much volatility (“noise”) in quarterly data.*
- *While a few early models assigned the data provision task to their evaluation contractor, more recent models assigned this role to implementation or operations contractors.*

Key Considerations

- *Subject to resource constraints or other specific circumstances in a model, providing multiple types and levels of data gives participants the flexibility to use the data according to their capabilities and needs.*
- *Regarding the timing for data provision, model teams will need to find the right balance among: 1) production time and resources, 2) whether expected uses of the data favor timelier over more complete data, and 3) how frequently participants can process new data.*

2.1 Types of data

Model participants often receive multiple types of data. We found three levels of data that were commonly provided in the models: 1) participant-level data, 2) beneficiary-level data, and 3) claims-level data.

Participant-level data refers to data reported at the level of the entity formally responsible for implementation of, and performance in, a given model (e.g., physician practices in models such as MAPCP and OCM, hospitals in CJR, and ACOs in Pioneer and NGACO). Illustrative types of data in participant-level feedback reports included:

- the demographic composition of the organization's patients in the model (e.g., average age, gender mix);
- average utilization rates (e.g., hospitalizations and ED visits per 1,000 beneficiaries; see ***Exhibit 2-1***);
- average expenditures per beneficiary – often subdivided by major categories of service (e.g., hospitalizations, skilled nursing facility (SNF), primary care, outpatient specialty care; see ***Exhibit 2-2***); and
- quality measures (e.g., percent of patients receiving various screening or monitoring services; see ***Exhibit 2-3***).

Fourteen of the 18 models we studied (78%) provided participant-level data. For all participants in a given model, these participant-level feedback reports were developed using a common methodology and were presented in a standardized format. Some model teams had considered whether to tailor the content of their feedback reports for individual participants within a model, but they generally viewed this as infeasible due to the time and resources required. Instead, many models accomplished tailoring by offering more granular data in addition to a participant-level feedback report, whereby recipients could decide whether and how to use the different levels of data.

Exhibit 2-1. Illustration of Utilization Data at the Participant Level

Measure	Your Practice (N beneficiaries=)	Comparison Hi HCC Practices (N practices=) (Avg. N beneficiaries per practice=)
Utilization		
Hospitalization Rate for Any Cause (rate per 1,000 beneficiaries per quarter)		
Hospitalization Rate for ACSCs (rate per 1,000 beneficiaries per quarter)		
ER Visits / Observation Stays Rate for Any Cause (rate per 1,000 beneficiaries per quarter)		

Exhibit 2-2. Illustration of Expenditure Data at the Participant Level

Average Medicare Payment per Beneficiary per Month					
	Q1	**Q2**	**Q3**	**Q4**	**Yr1**
All Services:					
Hospitalizations:					
ER Visits:					
Skilled Nursing Facility:					
Home Health:					
Lab:					
Diagnostics:					
DME:					
Hospice					
Outpatient (excluding ER):					
Primary Care:					
Specialty Care:					
Other:					

Exhibit 2-3. Illustration of Quality Data at the Participant Level

Quality of Care Measure (% beneficiaries with the disease)	Your Practice (N beneficiaries=)	Comparison Hi HCC Practices (N practices=) (Avg. N beneficiaries per practice=)
Number of assigned beneficiaries with claims-based diagnosis of <u>diabetes</u>		
% had HbA1c testing		
% had retinal eye examinations		
% had medical attention for nephropathy		
% had LDL-C screening		
% had all 4 diabetes process measures		
% had none of the diabetes process measures		

Beneficiary-level data, provided in 14 of the 18 models (78%), contained information summarized for individual, identifiable patients. These data often included a list identifying the patients attributed to the participating organization, along with data such as:

- key utilization information (e.g., number of hospitalizations and ED visits for each individual; see ***Exhibit 2-4***);
- Medicare expenditures for each individual;
- indicators for patients with certain conditions; and
- quality-related indicators (e.g., whether the patient received certain preventive services).

Exhibit 2-4. Illustration of Beneficiary-Level Data

		# Hospital Admissions		# ER Visits		# SNF Admissions		# Home Health Visits		Estimated Medicare Payments	
Last Name	**First Name**	**Current Year**	**Current Qtr**	**Current Year**	**Current Qtr**	**Current Year**	**Current Qtr**	**Current Year**	**Current Qtr**	**Current Year**	**Current Qtr**
Patient 1											
Patient 2											

Claims-level files were provided in 11 of the 18 models (61%). These data were typically large, detailed files with long lists of fields extracted from each claim record for beneficiaries attributed to the participating organization. Examples of these data fields include beneficiary identifier, claim identifier, line item number, date of service, provider identifier and location, diagnosis codes, procedure codes, and costs for each service. Claims-level files provide participants with a large amount of data and flexibility. However, the many claims record fields, raw format, and size of the files typically required a lot of work and data sophistication on the part of the user.

Exhibit 2-5 summarizes the levels of data CMS provided to participants in each model, while ***Exhibit 2-6*** presents additional detail on the data provided in each model.

Exhibit 2-5. Levels of Data Provided by CMS to Participants in Each Model

Model	***Participant-level***	***Beneficiary-level***	***Claims-level***
BPCI	✓	✓	✓
CCTP	✓		
CEC	✓	✓	✓
CJR	✓	✓	✓
CPC	✓	✓	
FAI	✓		✓
FQHC APCP	✓	✓	
HCIA Round 1		✓	✓
HCIA Round 2		✓	✓
HHVBP	✓		
IAH	✓	✓	
MCCM	✓		
MAPCP	✓	✓	
NGACO	✓	✓	✓
OCM	✓	✓	✓
Pioneer	✓	✓	✓
SIM Round 1		✓	✓
SIM Round 2		✓	✓
As percent of the 18 models	**78%**	**78%**	**61%**

Exhibit 2-6. Summary of Data Types, Formats, Frequency, and Benchmarking, by Model

Model	*Data type*	*Format*	*Frequency*	*Benchmarking/comparison data*
Bundled Payments for Care Improvement (BPCI) Initiative[3]	Awardee feedback reports, including a Model Overview report covering all the Awardee's episodes and up to 9 Clinical Group Outcome reports	Excel	Quarterly	Comparisons to the average of all BPCI Model 2, 3, or 4 participants, before and after risk adjustment
	Claims- and episode-level payment reconciliation data files	Text data files	Monthly and quarterly	
Community-based Care Transitions Program (CCTP)	Quarterly Monitoring Report (QMR), mainly at the level of the Community-Based Organization (CBO) participants, but some detail by partner hospital	PDF	Quarterly	Comparisons to the average of all model participants, in response to CBOs' feedback
	Key Performance Measure Analysis (KPMA) report, mainly at the CBO level, but some detail by partner hospital	Originally PDF but changed to Excel	Quarterly	
	Other reports created by learning system contractor (e.g., scorecards, readmission trend analyses, network diagrams)	Varied	Varied	
Comprehensive ESRD Care (CEC)	Monthly Expenditure and Claims Lag Report, at the ESRD Seamless Care Organization (ESCO) level	Excel	Monthly	Includes data for a national reference population
	Quarterly Expenditure Report (ESCO level)	Excel	Quarterly	Includes data for a national reference population
	Claim and Claim Line Feed (CCLF) reports	Text data files	Monthly	
	Beneficiary-level alignment report (also summarized by dialysis facility)	Excel	Monthly	
	Online data dashboard (ESCO level)	Online	Quarterly	Comparisons to the average of all model participants, 25/50/75 percentiles, and a

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[3] Data provided in BPCI Models 2, 3 and 4.

Model	*Data type*	*Format*	*Frequency*	*Benchmarking/comparison data*
				national reference population, before and after risk adjustment
Comprehensive Care for Joint Replacement (CJR)	Hospital-level feedback report; summary data on costs, quality, case mix, etc.	HTML file	Quarterly	Highlights statistically significant differences relative to the target price for overall episode costs or relative to historical baseline data for costs by type of service, utilization, quality, case mix
	Claims- and episode-level data files	Text data files	Monthly (changed from quarterly)	
Comprehensive Primary Care (CPC)	Practice-level feedback report, with patient demographics, costs, utilization, etc.; reported four-quarter averages rather than raw quarters	PDF	Quarterly	Comparisons to the average of model participants in the region, after risk adjustment; flagged differences of at least 20%
	Regional feedback report	PDF	Quarterly	Compared the region to the average of all CPC regions or sometimes to each region
	Beneficiary-level data files, with cost and utilization for attributed beneficiaries	Excel	Quarterly	
	Specialist report	Excel	One-time	
Financial Alignment Initiative (FAI)	State-specific monitoring report that includes data for each Medicare-Medicaid Plan (MMP) in the state; MMPs receive a version that does not identify other MMPs	Word and Excel	Varies – e.g., quarterly, annual	Comparisons to the average of all MMPs in the state
	Claims-level data files	Varies by data type/source	Varies by type/source – daily, monthly, historical baseline	
Federally Qualified Health Center (FQHC) Advanced Primary Care Practice	Practice-level cost and utilization report	PDF	Quarterly	Comparisons to the average of all model participants, without risk adjustment
	NCQA Readiness Assessment Survey (RAS) report; assesses the FQHC's progress towards Level 3 PCMH functionality	PDF	Biannual	

Model	*Data type*	*Format*	*Frequency*	*Benchmarking/comparison data*
	Beneficiary-level utilization files	Excel	Quarterly	
Health Care Innovation Awards (HCIA)	Claims-level extracts and person-level beneficiary data; details vary based on each Awardee's data request	Text data files	Varies – e.g., monthly, quarterly, annual	No explicit comparisons provided, but awardees can use the data to create relevant comparison groups
Home Health Value-Based Purchasing (HHVBP)	Interim Performance Report (IPR); provides the HHA's scores for quality measures that contribute to a Total Performance Score	Excel and an online version	Quarterly	Participant's historical baseline score and a benchmark score reflecting other HHAs in the state
Independence at Home (IAH)	Practice feedback report; single Excel workbook with both practice- and beneficiary-level data (attributed patients, cost, utilization, etc.)	Excel	Quarterly	No comparison data
Medicare Care Choices Model (MCCM)	Hospice-level aggregate report; includes enrollment, demographics, quality, utilization	PDF	Quarterly	Comparisons to the average of all model participants
Multi-Payer Advanced Primary Care Practice (MAPCP)	Practice-level feedback report; included patient case mix, costs, utilization, quality	PDF	Quarterly	Comparisons to the average of all model participants in the state, without risk adjustment
	Beneficiary-level utilization and lists of attributed/dropped patients	Excel	Quarterly	
Pioneer ACO and Next Generation ACO (NGACO)	Quarterly Benchmark Report (at the ACO level)	Excel	Quarterly	Compares the ACO's actual expenditures to benchmark values
	CCLF Report	Text data files	Monthly	
	Monthly Expenditure Reports (ACO-level costs and beneficiary-level alignment list)	Excel	Monthly	
	Online data dashboard (at the ACO level)	Online	Quarterly	Comparisons to the average of all model participants, 25/50/75 percentiles, and region, before and after risk adjustment
	SNF 3-day waiver chartbook (ACO level)	PDF and Excel	Quarterly	Comparisons to other, blinded ACOs

Model	*Data type*	*Format*	*Frequency*	*Benchmarking/comparison data*
Oncology Care Model (OCM)	Practice-level feedback report; includes cost and utilization for potentially attributed patients, using four-quarter averages rather than raw quarters	PDF	Quarterly	After a simplified risk adjustment, practices are compared to: 1) the average of OCM practices, and 2) the average of all practices in the nation with a threshold patient count
	Beneficiary- and claims-level data files	Text data files	Quarterly	
	Episode- and claims-level data reflecting formal attribution and risk adjustment	Text data files	Semi-annual	
	OCM-PREDCT, a tool to predict the baseline cost of an episode by its attributes	Excel	One-time	
State Innovation Models (SIM) Initiative	Claims- and beneficiary-level data files; details vary based on each state's request	Text data files	Varies – usually quarterly, some monthly	States can request optional 5% national sample data to do their own benchmarking

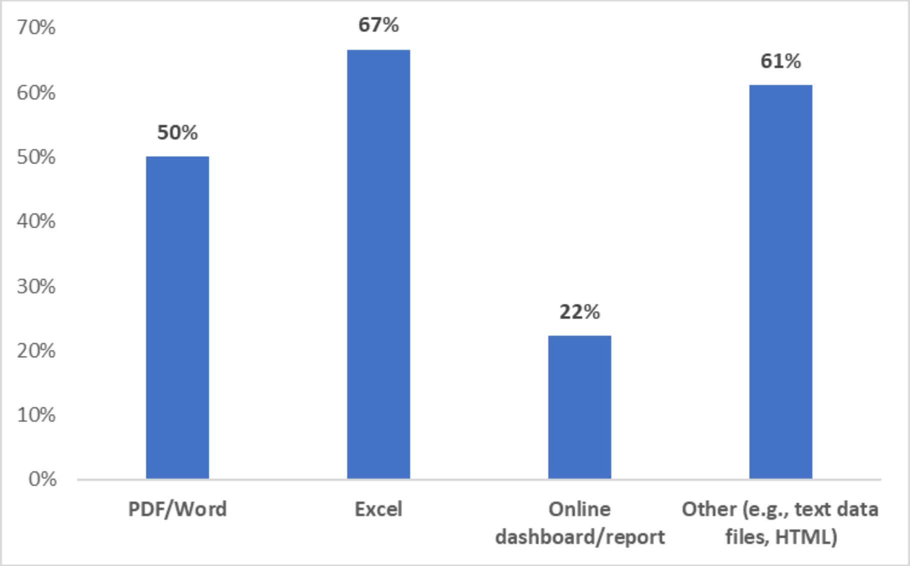
2.2 File formats and data display

Models used a mix of file formats across the reports and data files provided, as indicated in ***Exhibit 2-7***. For participant-level feedback reports, a mix of PDF versus Microsoft Excel formats were used across models. Some model teams opted for a PDF document (or sometimes a Word document) to be able to include more text to explain the data tables and charts in the report. Other factors that influenced file format were related to data user capability. For example, some models chose a PDF format due to concerns that some users would not be comfortable using Excel or (in at least one physician model) that some users would not have Excel available on their computers. These PDF reports were also typically longer.

In contrast, other model teams opted for an Excel workbook format because they wanted a short feedback report or to make it easy for users to interact with the data. The Excel report formats ranged from simple to sophisticated. For example, the initial version of the CPC+ practice feedback report is a more sophisticated Excel format that includes numerous buttons for drill-down capabilities, including an option to drill down to beneficiary-level data in an underlying page that feeds the practice-level view. Models providing data in a PDF report typically did not also make available an Excel version of the same data.

One recent model opted for an HTML format, although the report included buttons for easy export of all tables to Excel. Another recent model originally wanted to format its feedback report with a data visualization software package, but dropped that plan due to 508 compliance concerns.

Exhibit 2-7. File Formats for Data Provided to Model Participants, by Percent of Models (N=18)



Note: Percentages sum to more than 100% because some models provide different types of data in different formats.

Virtually all models providing beneficiary-level data did so in an Excel format, and those few models with an alternative format included a capability for easy export into Excel. Large, detailed claims-level data were provided in a range of text data formats that were importable into Excel or more sophisticated analytical tools (e.g., Microsoft Access, SAS).

CEC, Pioneer, and NGACO also produced an online data dashboard with interactive features like data filtering and chart creation. However, as discussed in Chapter 3, key informants generally reported that, thus far, these online reports have not been used as much as they had expected. HHVBP provides both a downloadable feedback report and an online version with the same format and detail.

Regarding how much content to include (e.g., report length) or the right balance of visuals versus text, different models made different decisions based on the circumstances of their model, such as the expected needs and level of data expertise among the model participants. A few recent models (e.g., CJR) have moved toward a “less is more” approach for their participant-level feedback reports. For CJR, this emerged as a lesson from the more voluminous, complex reports in BPCI. CJR provides a short report emphasizing tables and charts for hospital-level data, but supplements this dashboard format with claims-level data for those participants who want to use that granularity.

2.3 Frequency and time lag

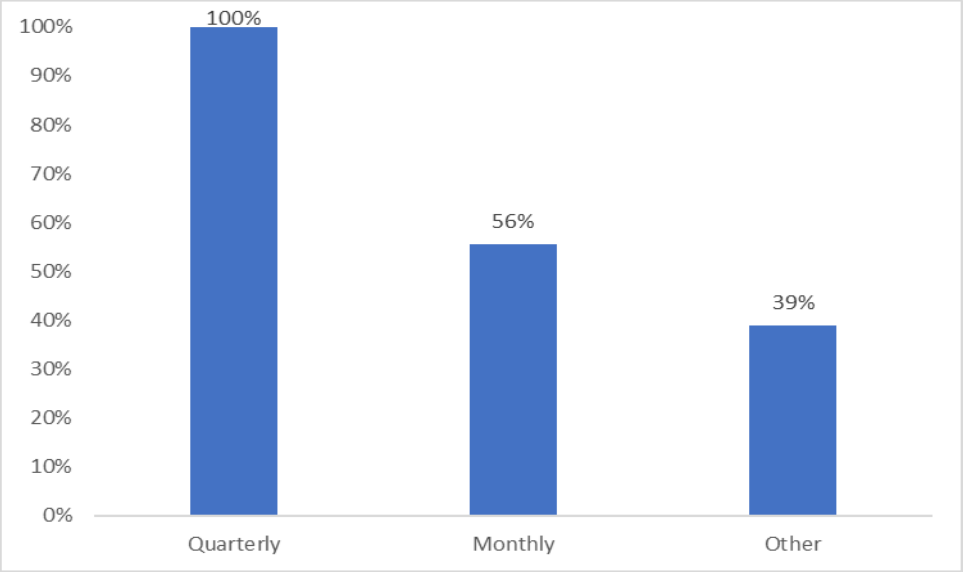
Model teams also had to decide how frequently to provide data to participants. A second, closely related decision concerned how much run-out time, if any, to allow for the claims data to mature before producing reports or files covering a given performance period. Working with claims data typically involves a trade-off between timeliness and completeness, because some claims are not received or fully processed until several months or more after the date care was delivered. A longer run-out period will mean the data are more complete, but less timely.

Some model participants started with unrealistic expectations about the timeliness of the data that CMS would be able to provide. Some participants, especially physician practices, initially seemed to expect data to be close enough to real-time to substitute for other, local information flows (such as notification of hospital admissions/discharges or ED visits). However, providing real-time reports with claims-based data is not realistic. We found that the total time lag in claims-based data provided in different models was often influenced by decisions on the run-out time for data maturity, the time needed to extract the data and produce the reports or files, and the reporting frequency that model resources could support.

All of the models we studied provided at least some data on a quarterly frequency, but some also provided data at another frequency (see ***Exhibit 2-8***). In deciding how frequently to provide data, models often considered several factors, including:

- whether expected uses of the data favored timelier or more complete data,
- the production time and resources required to produce the reports or data files, and
- how often model participants would likely be able to process or analyze new data they receive.

Exhibit 2-8. Percent of Models Providing Data at a Quarterly, Monthly, or Other Frequency (N=18)



Note: Percentages sum to more than 100% because some models provide different types of data at different frequencies.

Variation in the frequency of data provision depended, in part, on the type of data. Claims-level data were sometimes distributed monthly, with no additional run-out period and a relatively quick production time because the data were provided in raw files. Conversely, participant-level reports were typically distributed quarterly, with claims run-out of at least two months, and often longer, for sufficiently mature performance data. Model teams widely believed there was limited value in providing participant-level reports more often than quarterly because the reports would have at least a three-month lag anyway, given at least two months of run-out plus at least one month for production. In some models, concern about small sample sizes and associated noise in participant-level the data was another reason to provide these data quarterly, rather than monthly. Also, for some participants, monthly data could be overwhelming. For example, HCIA participants had the option of requesting monthly data feeds, but almost all chose quarterly feeds.

Regarding decisions on claims run-out, a compromise we found in some models was to have longer run-out on participant-level feedback reports; less (or no) run-out on beneficiary-level data; and no run-out on claims-level data if the data were being refreshed monthly. More generally, recent models have tended to opt for timelier data over more complete data for interim feedback reports, usually by reducing the number of months of claims run-out reflected in the data.

We also found that data for episode-based models appeared more lagged from a performance period, because the data must allow for the duration of episodes (e.g., 90 days) that start near the end of a performance quarter.

2.4 Inclusion of benchmarks

Many key informants across models observed that peer comparisons were an important motivator for model participants. Model participants wanted to see not just how they compared to a pre-determined standard or target, which was relevant in some model designs, but also how they performed relative to other participants (their peers).

Most participant-level feedback reports included a comparison to a benchmark. Typically this was a comparison to the average of other model participants after some level of risk adjustment to control for differences in patient case-mix. The ACO models' online dashboards provided toggle options, driven by underlying data, that allowed participants to compare their data in several ways (e.g., to the average of model participants, the 25th/50th/75th percentiles, or sometimes to blinded individual participants).

2.5 Censoring of claims with sensitive diagnoses and dealing with small sample sizes

To comply with current federal policy under 42 CFR Part 2, which restricts sharing of patient-identifiable data on treatment of substance use disorders,[4] models excluded such claims when providing beneficiary- or claims-level data. This data censoring reduced the usefulness of these data in some models, particularly when participants wanted to use the beneficiary- or claims-level data to support care coordination (e.g., to identify high-risk patients who might benefit the most from coordination).

A second privacy consideration that models had to address concerned small cell sizes in participant-level reports. There was often a balance between deciding to suppress cells with less than 10 observations, so that the data were not considered protected health information/personally identifiable information (PHI/PII) and the report could have wider circulation, versus showing these cells and making the report subject to a Data Use Agreement (DUA), which could prohibit wider sharing of the report.

Additionally, for model participants with a small number of Medicare beneficiaries reflected in quarterly participant-level feedback reports, these small sample sizes posed a risk of data volatility and misinterpretation of quarterly trends. One solution adopted by some models was to report moving averages of the most recent four quarters rather than reporting individual quarters. A trade-off in this approach, however, is that model participants could not easily see their experience in the most recent quarter or two – such as seeing early results from a new quality improvement initiative.

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[4] For further information, see: https://www.samhsa.gov/laws-regulations-guidelines/medical-records-privacy-confidentiality#records-privacy.

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2.6 Responsibility within the model team for producing the data

In addition to the many design issues described above, a key early decision faced by model teams is which component of the model team should have primary responsibility for producing the data for model participants. Three early CMMI models included in this study relied on the evaluation contractor for provision of feedback reports, because of the presumed efficiencies stemming from the evaluation contractor already producing participant-level data files with similar performance measures for evaluation purposes. Despite this original efficiency argument, model teams have generally concluded that it is better not have the evaluation contractor filling this role, for two reasons:

- First, data provision requirements have often proved to be more complicated and resource-intensive than initially anticipated, and evaluation contractors already have many tasks to accomplish.
- Second, provision of data to model participants is conceptually an implementation task which can affect the outcome of a model, and therefore the model evaluator should not have a role in an implementation task.

In the more recent models in the study, the data provision task was assigned to contractors that were not involved in evaluating the model.

3. Dissemination of the Data

We identified two key steps in the dissemination process:

- the process for authorizing specific participants for access to the data; and
- distributing the data to the model participants.

Our analysis developed lessons learned regarding both of these steps in the dissemination process.

Key Findings

- *Identifying appropriate points of contact (POCs) for data within each participant organization was important but often difficult, especially for models with mandatory participation.*
- *For the models that did not develop and provide a standardized set of data files (HCIA Rounds 1 and 2, SIM Rounds 1 and 2, and the claims data provided to states in FAI), the data request process was time-consuming for participants and they needed substantial TA with preparing their requests.*
- *Model teams generally found secure web portals to be a useful approach for distributing data, but participants often required start-up assistance with user accounts and learning how to use the portal. Also, after their data portals were designed, model teams often realized that additional capabilities would have been useful, but it was not always feasible to add these features later.*
- *Participants in several models complained about the number of separate websites that they had to access for different purposes.*

Key Considerations

- *The data POC(s) usually should be the staff member(s) who will actually be downloading, receiving, or otherwise accessing the data – often not the individual responsible for other aspects of the organization's participation in the model.*
- *To maintain lists of authorized data users over the course of the model, it can be efficient to periodically send each participating organization a list of users to confirm/update.*
- *It may be helpful for CMMI to increase model teams' awareness of the Data Request and Attestation (DRA) approach as a potential, streamlined alternative to a traditional Data Use Agreement, depending on model circumstances. Examples of DRA documents are available here.*
- *CMMI's Business Services Group (BSG) urges model teams to reach out early for help planning IT requirements, as some data portals can require more than 12 months to develop.*
- *When planning a data portal, two helpful capabilities to include are: 1) routine reporting on model participants accessing their files, and 2) space for ongoing access to earlier data cycles.*
- *It could also be helpful, when feasible, to reduce the number of websites in a model that a given individual might have to access with different user accounts, by establishing a single log-in entry point (depending on security requirements or other factors).*

3.1 The process of authorizing participants' access to the data

One lesson mentioned by key informants across a number of models was the importance, and the difficulty, of identifying the right POCs within participant organizations who would be responsible for accessing the CMS data. In many models, the participating organization identified an overall POC for interacting with CMS, such as a senior executive or clinician, but another, typically more junior staff member, was responsible for downloading CMS data reports from a web portal. Being able to identify the POCs who will access the data was important for two reasons:

- First, the data POC was typically the individual who needed to be authorized for a user account, when data were downloaded from a web portal or an electronic file transfer (EFT) site.
- Second, model teams often sent emails to promote use of the data (e.g., to announce the release of new data, to announce a related TA event, or to inquire as to why the participant has not yet downloaded available data). Therefore, it was important to ensure that such emails reached the individual who was responsible for accessing the data for the organization.

In the two mandatory models in this study, because participants were not proactively submitting an application for participation in the model, it was even more difficult to identify appropriate POCs among the participants. Accomplishing this step was time-consuming. For example, HHVBP, a mandatory model in eight states, needed eight months to identify primary POCs for approximately 90-95% of the almost 2,000 home health agencies (HHAs) covered by the model. CJR, which was launched as a mandatory model, also experienced difficulty in identifying data POCs for the approximately 800 hospitals originally covered by the model.

Models also expended effort maintaining valid lists of data POCs over the course of the model. Participant organizations experienced staff turnover, and some participants realized over time that there were additional individuals who needed to be authorized to access or use data that include PHI/PII. Rather than relying on model participants to inform CMMI about turnover among data POCs, one model team found it efficient to proactively send each participant organization the list of its authorized users on a regular basis, so that each organization could validate or update its list as needed. This approach was particularly important for organizations who were less engaged with the CMS data.

Several model teams found it most efficient to have model participants send all requests for additional user authorizations through the established or primary POC. This approach ensured that the burden did not fall on the model team to confirm with the organization that each additional individual had a legitimate need for a user account.

Having a large volume of model participants complete DUA applications, and then administering those DUAs on an ongoing basis, involved significant time and resources. Key informants reported that CMS's new Enterprise Privacy Policy Engine (EPPE) system has improved internal administration of the DUA process. Nonetheless, the DUA process could still be burdensome for model participants. After dealing with numerous DUA issues in BPCI, a member of the BPCI model team played a key role in the development of a new, streamlined alternative to the traditional DUA, known as a Data Request and Attestation (DRA), which was less complicated for participants to complete and for CMMI to administer. The DRA approach is only an option for models in which the participants receiving the CMS data are HIPAA-covered entities,[5] and depending on the details of the model and the data provided, there may still be reasons a DUA is more appropriate than a DRA. Several recent models have used the DRA approach (e.g., CJR, OCM, and NGACO), and the FAI model team was planning a shift from DUAs to DRAs. However, based on our interviews, many CMMI staff were not yet aware of the DRA option. Examples of DRA documents are available here.

The process for authorizing access to CMS data was more cumbersome in the three models that did not develop standardized data files for participants: for state governments in SIM and FAI, and for awardees in HCIA.[6] In SIM, rather than CMS providing a standardized data feed to all participating states, the states can request specific Medicare claims data on a case-by-case basis for research purposes, which may include design of their reform efforts and self-evaluation. For a data request under SIM, states work with the CMMI model team and CMS's Research Data Assistance Center (ResDAC) to prepare and submit their specific requests for Medicare data in the form of a DUA.[7] Our analysis of tracking information provided by ResDAC in early 2017 indicated that the average time from submission to approval for SIM data requests has been six months for new requests and four months for amendments.[8] Some states have complained about the time and effort involved in obtaining Medicare claims data, as well as the constraints placed on their use of the data. For example, in September 2016, CMMI issued a Request for Information (RFI) to solicit feedback on states' experience in SIM. Among 18 state governments who responded, a handful voiced complaints about access to Medicare data in response to CMMI questions on data sharing (Centers for Medicare and Medicaid Services, 2017). One state's response referred to "numerous" unsuccessful attempts to obtain Medicare data on beneficiaries who are not Medicare-Medicaid dual eligible beneficiaries, while another reported that "it is surprisingly difficult to get access to Medicare Parts A and B data. There are too many hurdles, barriers, burdens, costs, and restrictions that stand in the way of ... incorporating those data into the [state's] APCD." A third state commented that "CMS could support state-based innovation and collaborative multi-payer payment models by facilitating more readily-accessible and timely Medicare data."

The Qualified Entity (QE) program under the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) may be another useful avenue for states interested in Medicare data for certain operational purposes, including providing confidential feedback reports to providers. However, one

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[5] Under the Health Insurance Portability and Accountability Act (HIPAA), "covered entities" are: 1) health care providers who transmit electronic information in connection with a transaction for which the Department of Health and Human Services has adopted a standard, 2) health plans, and 3) health care clearinghouses that process nonstandard health information they receive from another entity into a standard, or vice versa. For more information, see: https://www.hhs.gov/hipaa/for-professionals/covered-entities/index.html.

[6] In FAI, the data files provided to Medicare-Medicaid Plans (MMPs) are standardized, but the data files provided to state governments in FAI are not standardized.

[7] ResDAC provides TA to researchers interested in requesting CMS data. For more information, see: https://www.resdac.org/.

[8] The data obtained from ResDAC may not include all SIM requests that have been submitted.

state responding to the RFI on states' experiences in SIM also characterized the QE option as onerous (CMS, 2017).

In the FAI model, states submit their requests for Medicare claims data for Medicare-Medicaid dual eligible beneficiaries to CMS's Medicare-Medicaid Coordination Office (MMCO), with significant assistance from the State Data Resource Center (SDRC).[9] States have also found this data request process to be complicated, although states appreciated the assistance they received from the SDRC. In FAI, the Medicare claims data provided to states are limited to Medicare-Medicaid dual eligible beneficiaries, for whom the states are involved in paying for care. As a result, the uses of the Medicare data in FAI are explicitly intended to include operational purposes, such as care coordination and program integrity efforts. This differs from the restrictions on states' use of Medicare data obtained under SIM for beneficiaries who are not dual eligible beneficiaries, because states do not have a role in paying for, or delivering, care for these other Medicare beneficiaries.

As in SIM, CMS does not provide a standardized data feed to HCIA awardees. Instead, HCIA awardees can request data with a DUA application submitted to ResDAC. Initially, CMMI staff on the HCIA model team served as the primary resource for assisting awardees with these requests, but as the volume of requests grew, the model team recognized the need for more substantial TA resources and brought ResDAC into the request process. While the addition of ResDAC has improved this process, some HCIA awardees still complained about the time and number of steps involved in the DUA process. Our analysis of tracking information from ResDAC indicated that the average time from submission to approval has been six months for new HCIA Research DUA requests, four months for new HCIA Operations DUA requests, and three to four months for amendments.[10, 11] One lesson learned from HCIA is that it would have been helpful for awardees to have a better understanding up front of the process and timeline involved in requesting CMS data. Another lesson in the case of HCIA and SIM was that sometimes the HCIA awardee or the SIM state relied on an overall project manager to prepare its request for CMS data, but these individuals sometimes lacked data expertise, which may have increased frustration with the request process.

3.2 Distribution of the data to model participants

We identified several methods used by different models for distributing data to model participants, as summarized in ***Exhibit 3-1*** below:

- **Electronic file transfer (EFT) or a download from a secure web portal** – 13 models distributed some or all of their reports or underlying data files via a web portal, from which model

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[9] The SDRC provides TA to states seeking Medicare data concerning Medicare-Medicaid dual eligible beneficiaries. See: http://www.statedataresourcecenter.com/.

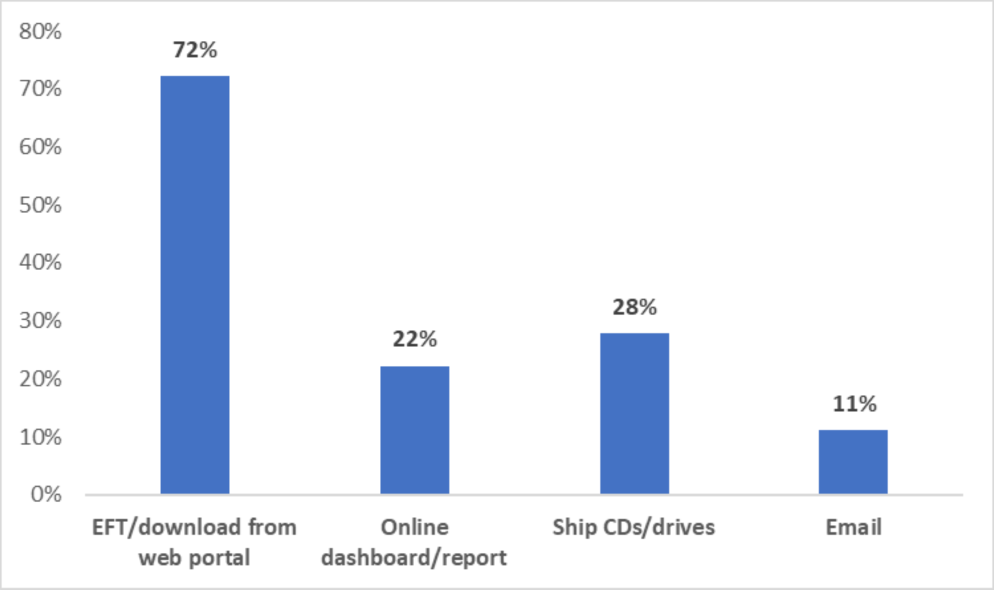
[10] The data obtained from ResDAC may not include all HCIA requests that have been submitted.

[11] Some HCIA awardees can request Medicare data for operational uses because they are involved in paying for or providing care for Medicare beneficiaries.

participants could download files or, in some cases, receive them through a secure transfer system or EFT process.

- **Encrypted email attachments** – Two models used email to distribute reports, at least in part. One early model with a small number of participating organizations distributed its feedback data files to participants as password-encrypted email attachments. In another model, FAI, CMS used email to distribute a quarterly report to each state's Contract Management Team, but these reports only reflected aggregate plan-level data, rather than PHI/PII.
- **Shipment of encrypted CDs or disk drives** – Five models shipped data files to participants on encrypted disk drives. CMS has used this mode for distributing the claims-level data provided to HCIA awardees and SIM states. In the FAI model, CMS shipped historical Part A/B claims-level data on encrypted drives, although current Medicare claims files are distributed by EFT.
- **Online dashboard/report** – Three ACO models (Pioneer, NGACO, and CEC) provided an online dashboard report for participants, in addition to distributing other data files by EFT. HHVBP also provides a version of its quarterly feedback report that is viewable online, in addition to the downloadable version.

Exhibit 3-1. Data Distribution Methods, by Percent of Models (N=18)



Note: Sum of percentages exceeds 100% because some models use multiple methods of distribution.

In SIM, CMMI originally planned for states to access Medicare claims data through the Virtual Research Data Center (VRDC), but the states instead wanted to receive physical copies of their data files. Therefore, a CMS contractor ships the data files on encrypted CDs or disk drives; this same approach has been used in HCIA. Recipients in both models reportedly have had no issues with this shipment approach, but for a future model similar to HCIA, requiring awardees to access data remotely via the VRDC would eliminate any potential issues associated with shipping and handling the encrypted drives.

Model teams that have relied on a web portal for data distribution have generally found this approach to be useful in terms of security, efficiency, and scalability, but several issues have detracted from the portals' overall effectiveness:

- Many models experienced significant start-up issues with their web-based data portals. For example, model participants often required assistance with establishing or maintaining user accounts as well as learning how to use the portal.
- One model team found it difficult to troubleshoot problems or questions from users of the model's EFT portal because it was not designed in a way that CMMI staff could see the same view of the portal as the model participants.
- One model realized that it would have been helpful if its EFT data portal had the capability and space to archive prior quarterly reports for later access, once the most recent set of quarterly reports had been placed on the portal.
- CMS currently requires passwords to change every 60 days for websites distributing PHI/PII data. While appropriate for data security, particularly given participant organizations' staff turnover, this requirement does make it more cumbersome for model participants to receive the data from CMS. For a model which provides data to participants on a quarterly frequency, a requirement to change passwords every 60 days means that a new password is required every time a new quarterly report is released.
- Participants in several models complained about the number of separate websites that they had to access for different purposes – with each website typically requiring its own user account, password, etc. One model, for example, had five separate websites for participants, including two websites for distributing different data reports to participants. The number of websites in a model was often driven by differences in technical capabilities or security requirements, but nonetheless some model participants found it cumbersome to maintain all of the associated user accounts.
- Some models' data portals were not designed to allow for routine reporting of statistics on model participants' portal activity. In some cases, the model team could monitor log-in activity for the data portal, but not specific file downloads or other activity once a user had logged in. Some model teams obtained ad-hoc reports on download activity, but others reported that this information could not be easily generated. Several model teams that did not have visibility of data portal usage commented that receiving such statistics routinely would be useful for monitoring participants' uptake of the data available from CMS.

Our interviews indicated that model teams were not always confident in their understanding of the web portal options available to them for data distribution, or all the implications of initial decisions related to establishing and designing a web portal for data distribution. CMMI now has a central IT component, within the Business Services Group (BSG), which urges model teams to reach out early for help in planning IT requirements.

In any case, the impacts of early IT-related decisions were not always easy to anticipate. First, model teams often had limited time to devote to IT issues when they were wrestling with a wide-range of model design and start-up issues. Second, specific requirements for data provision often evolved over the course of a model, based on feedback from data recipients. One model team that we interviewed perceived its ability to make mid-course revisions to the content or format of its quarterly feedback report as being significantly constrained by an early decision to have the report file for each participant produced by a central IT contractor that supports the portal. The IT contractor produces all of the participant reports from a large underlying data file developed by the model's implementation contractor. Because the central IT contractor in this case provides support to multiple models and typically is in high demand, the contractor's work priorities must be governed by a change management process. There can be important advantages to relying on central IT contractors to support multiple models, such as helpful expertise, economies of scale, and more efficient use of model resources. Nonetheless, in this case, the model team perceived that feedback report changes that did not seem conceptually difficult, such as adding graphs to an Excel workbook report, might take many months for implementation, because such changes were not a high enough priority relative to other models' needs and given limited central resources. In contrast, some model teams that retained full internal control over report production were able to make numerous changes over time in both content and format.

Finally, as noted above, the learning system contractor supporting Pioneer, NGACO, and CEC implemented an online data dashboard tool for participants, as a complement to the other data reports available from CMS. Although participants did use these online dashboards, they seemed to use them less than some of the other data provided. In part, this difference in usage is a function of the ACO dashboards being updated quarterly; whereas ACOs receive expenditure reports, lists of aligned beneficiaries, and claims-level data files on a monthly basis. The dashboards generally also have a longer data lag, and the dashboard resides on another website that requires its own user account and password. Notably, in HHVBP, when the model team asked attendees of a data-related webinar whether they only viewed the online version of their feedback report or also liked to download it, over 90% of the respondents said they liked being able to download their report.

4. Data Recipients and Their Prior Experience with Data

This chapter addresses: 1) model features affecting the degree of prior data experience that participants had, and 2) organization-level characteristics that affected participants' capacity to work with the data provided.

Key Findings

- *There was considerable variation across and within models concerning participants' initial capacity to work with data.*
- *Larger organizations or participants affiliated with a larger parent organization tended to have access to more data expertise than smaller or independent participants, although this was not always the case.*
- *In several models, a significant number of participants hired consultants to supplement their capacity to work with data.*

Key Considerations

- *The heterogeneity in participants' level of data expertise drives a need for substantial and varied learning support related to the data provided.*
- *Model teams can consider communicating to participants the value of making an early self-assessment of whether the participant's internal data expertise is likely to be sufficient to take advantage of the data and TA provided by CMS or whether support from a parent organization or consultants may be needed. Such a self-assessment can be particularly valuable in models providing claims-level data.*

4.1 Model features affecting the degree of participants' prior data experience

As described in ***Exhibit 1-2*** in Chapter 1, the models included in this study differed significantly in terms of the types of organizations receiving data as model participants:

- Five models provided data to physician practices (CPC, FQHC, IAH, MAPCP, and OCM).
- Several models provided data to ACOs, including not only the Pioneer and Next Generation ACOs but also dialysis providers who function as an ACO for ESRD patients in CEC.
- CJR provides data to acute care hospitals. BPCI also provided data to acute care hospitals, as well as awardee "conveners" who partner with acute care hospitals and other providers.
- CCTP provided data to Community-Based Organizations (CBOs), many of which were local public agencies or non-profits who partnered with local hospitals. Local public agencies and non-profits also comprised some of the awardees who could receive data in the HCIA model.
- States received Medicare data in FAI, SIM, and MAPCP.

- Health plans receive data from CMS in FAI and comprised some of the awardees in HCIA.
- HHAs and hospices receive data in HHVBP and MCCM, respectively.
- Universities, including academic medical centers, were another common type of HCIA awardee.

This diversity among the types of participants led to heterogeneity across the models concerning capacity to use data. For example, ACOs and the large conveners who are major participants in BPCI typically have far more resources to devote to processing and analyzing data than most primary care physician practices, including staff with significant prior data experience. CCTP was another model in which most participants started out at the low end of the spectrum in terms of prior data experience. Most CBOs did not have high-level data capabilities, were not used to working with Medicare data, and initially needed significant assistance in reviewing their quarterly feedback reports. To supplement in-house staff, many ACOs that joined Pioneer – an early ACO model – also initially hired vendors or consultants to help them implement data warehouses and associated reporting capabilities, including processes to integrate claims-level data with clinical data from an electronic health record (EHR) (Green, 2015).

Even among the models for physician practices, the specific focus of the model could still lead to heterogeneity across models with respect to prior data experience. A key informant noted that, compared to primary care practices, oncology practices tend to have more prior experience working with data, especially financial data, because they have to manage the costs and revenue associated with a range of high-cost drugs for cancer treatment. The greater financial resources in oncology practices, relative to primary care practices, also enabled a significant share of OCM practices to hire consultants to help them work with the data received from CMS.

4.2 Organization-level characteristics affecting recipients’ capacity to work with the data

In addition to differences at the model level, there were also organization-level differences that created significant heterogeneity in participants’ prior data experience within models. In general, within a given model, larger participants tended to have more data expertise and resources than smaller participants, and were, therefore, more equipped to make use of CMS data. Similarly, participants who were owned by or affiliated with a larger organization could sometimes gain access to the data expertise and resources of the parent organization. These differences between large and small participants, and independent participants versus those with a parent organization, were especially evident in models that provided claims-level data. For example, in CEC, the ESCOs owned by two of the large dialysis chain companies were early and active users of the large claims-level data files from CMMI, while smaller participants generally struggled to use these data, at least initially.

Differences in prior data expertise were not always a function of organizational size, however. Key informants noted that even small physician practices sometimes were quite advanced in their use of data due to the personality or skill set of a specific individual in the practice – often, the physician leading the practice. This point highlights that the presence or absence of an individual champion for data usage can be a key factor in an organization’s level of data expertise and engagement.

Specific to the HCIA model, there was a great deal of variation in data expertise due to the diversity in types of awardees. For example, health plans and universities (e.g., academic medical centers) receiving HCIA awards tended to have access to personnel with significant prior experience working with claims- and beneficiary-level data, while community-based awardees (e.g., non-profits, local public agencies) were less likely to have that same level of expertise.

In considering the expertise of data recipients, it is also important to recognize that, in general, the immediate recipients and users of CMMI data tended to be staff in administrative roles (e.g., finance staff) or staff responsible for quality improvement or care coordination. It was less common for reports to directly reach front-line clinicians. Also, as noted above, for participants owned by a parent organization, corporate-level analysts were often involved in analyzing the data from CMMI. In some models, a significant share of participants hired data consultants – for example, an estimated one third to one half of all OCM practices hired a data consultant.

5. Learning Activities and TA to Support Data Provision

In this chapter, we first discuss the various types of learning activities and TA resources provided to support data provision, and then we identity higher-level lessons related to the implementation and effectiveness of these activities.

Key Findings

- *Key informants widely agreed that providing data without training is not effective.*
- *Common topics for training included: how to request data (especially in models that did not provide standardized reports or files), how to access the data, how to interpret feedback reports, how to work with claims-level data, and how to use the data.*
- *Models delivered many different types of learning activities and TA to support data provision.*
- *Peer-to-peer learning was widely viewed as popular and effective, although model participants also valued access to CMMI's data experts for technical questions.*
- *User groups, "office hours," and several types of one-on-one assistance provided opportunities to tailor TA for participants with different levels of data expertise.*

Key Considerations

- *Offering early TA activities and resources can support initial engagement with the data, while continued assistance over time can support participants who are not ready to engage with feedback data until later in the model. Also, those engaging early will have evolving needs as they work with the data.*
- *A key question is whether, or how much, a model should assist participants in learning to use the CMS data in their operational workflows and decision-making, relative to participants relying on their own resources or consultants. Peer-to-peer learning can be especially effective in this area.*
- *Opportunities for peer-to-peer learning can include user groups, presentations by high performers, in-person meetings, and discussion threads on the Connect site.*
- *More tailored, but resource-intensive, TA can be provided with one-on-one assistance, such as help in requesting data, a one-on-one call to walk through a participant's feedback report, or use of the data in practice-coaching sessions.*
- *Periodic assessments that solicit participants' views on specific data-related learning needs can inform refinements to TA over the course of the model.*
- *It can also be helpful for model teams to encourage periodic meetings that include the contractor(s) producing data for model participants and the learning system contractor to discuss possible refinements to the data and/or related TA.*

5.1 Types of learning activities and TA that support data provision

Key informants widely agreed on the importance of providing training and other resources to help model participants with the data provided. Common topics for which training was needed included:

- how to request data (especially in models that did not provide standardized reports or files);
- how to access the data (e.g., training on web portals);
- how to interpret feedback reports;
- how to work with claims-level files; and
- how to use the data.

The models in this study have collectively implemented a wide range of learning activities and TA resources to help model participants with these topics. We identified 10 different types of these activities and resources related to data provision:

- introductory webinars and videos aimed at all model participants;
- technical documents;
- user groups;
- “office hours” sessions, in which the data experts are available to answer questions
- one-on-one assistance;
- all-day or multi-day meetings bringing together model participants and the model team;
- repackaging of the feedback reports by the learning system contractor;
- a CMMI online knowledge management and collaboration site known as the Connect site;
- newsletter articles featuring feedback data; and
- a helpdesk.

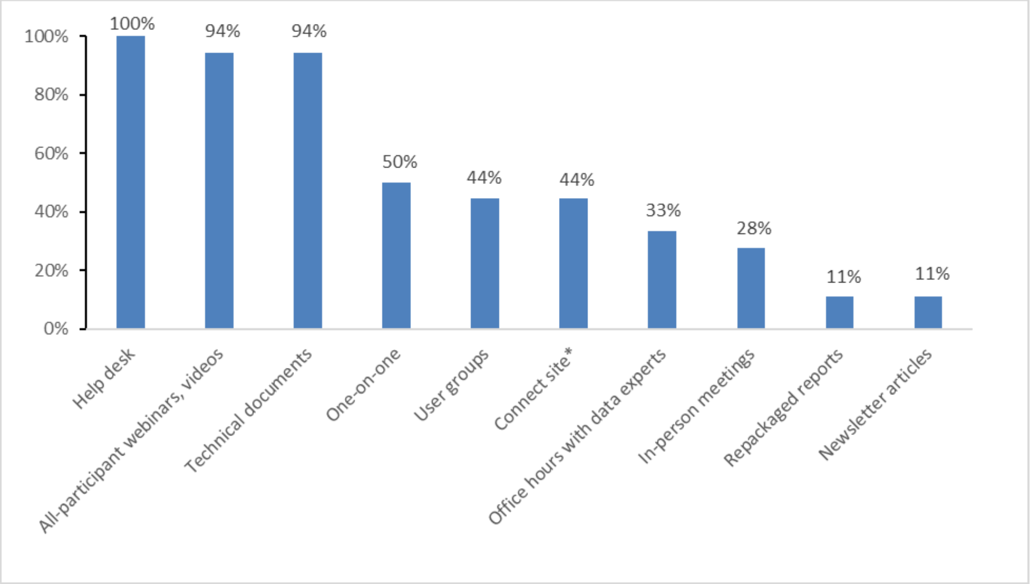
Exhibit 5-1 indicates the percent of models in this study using each of these types of support.

5.1.1 Introductory webinars aimed at all participants

Virtually all models delivered introductory, all-participant webinars related to data provision. These webinars were an efficient means for reaching a large number of model participants, but typically their content had to be designed for the lowest common denominator in terms of audience expertise.

There was variation in the number and frequency of data-related webinars. In BPCI, for example, CMMI provided early webinars with basic information about Medicare claims data, the model team and its payment reconciliation contractor delivered numerous early webinars on the data reports they produced, and the evaluation contractor delivered introductory training webinars on its feedback reports every quarter in which new awardees entered the model. CCTP delivered webinars on its quarterly monitoring report (QMR) as part of each quarterly release for the first three years of the model. With each release of a quarterly feedback report, HHVBP has used its “Journey to Improvement” webinar series to focus on a different component of the data reported and how that data could be used for quality improvement. In some models, participants delivered webinar presentations on how they worked with and used the data, and key informants reported that such peer-to-peer presentations were especially popular and effective.

Exhibit 5-1. Types of TA/Learning Activities to Support Data Provision, by Percent of Models (N=18)



* The Connect site is a CMS Innovation Center online knowledge management and collaboration platform.

In most models, webinar recordings and slide decks were archived online for subsequent viewing or downloading by model participants who were unable to attend the live sessions. Similarly, a few models recorded and archived shorter videos on narrow topics for on-demand viewing. For example, in FAI, the SDRC contractor that provides TA for states requesting data recorded several six- to eight-minute video tutorials to address common questions received.

5.1.2 Technical documents

Virtually all models also provided technical guides or similar documentation containing detailed information on their feedback data and reports. However, key informants generally believed that most model participants tended not to read these documents. One model found it helpful to identify key terms in the feedback report and embedded hyperlinks directly in the report that took the reader to definitions in a glossary. Another model provided data recipients with a brief, stand-alone document with instructions on how to encrypt Excel files with a password. A few models also incorporated education on data portals and reports in Frequently Asked Questions (FAQ) documents.

5.1.3 User groups

Half of the models in the study have included some type of user group or workgroup related to the data provided by CMS. These groups typically met as web-based sessions or conference calls. Some groups met periodically on an ongoing basis, while others, such as data affinity groups, were planned for a brief, more focused period. As an example of an ongoing group, a user group focused on the Claim and Claim Line Feed (CCLF) report, which is provided in multiple ACO models, has helped participants who have struggled with this large, monthly data feed. CJR and OCM both implemented data affinity groups early in model implementation, and CEC is planning a data affinity group for spring 2018. OCM's data affinity group focused on use of data for quality improvement.

These types of user groups were particularly conducive to peer-to-peer learning. Many participants in these groups were willing, and sometimes even eager, to share their experiences using CMS data. For example, after joining the CCLF user group, three large CEC participants made peer-to-peer presentations on their experiences using the CCLF data.

User groups can also facilitate tailoring of TA to target model participants with different levels of prior experience working with data. For example, CJR split its data affinity group into two sub-groups for less and more sophisticated users based on participants' self-assessment—however, the whole group still met at times because participants thought the broader discussions were also valuable.

User groups can be an important source of feedback from model participants about the data. Based on the issues and challenges discussed by group members, the model team may be able to identify possible opportunities to make the data more helpful to participants. In Pioneer, one role for a Data Analysis Work Group was to provide participant feedback as the model's online data dashboard was developed.

5.1.4 Office hours

About a third of the models offered "office hours" calls, with data experts available to answer questions from data recipients. Such calls were viewed as beneficial and therefore were held frequently when there was sufficient interest (particularly after initial reports and files were released). Typically, attendance waned and questions tapered off over time, at which point, the model scheduled these sessions less often or ended them altogether. Several of the models that held office hours also developed and updated an FAQ document for sharing with all participants.

5.1.5 One-on-one assistance

One-on-one, individualized learning support provided in the models included phone calls, emails, and, in a few models, on-site coaching. Despite having approximately 100 participants at one point, CCTP managed to hold one-on-one calls with CBOs to walk through their feedback reports. IAH also occasionally conducted one-on-one calls to walk through participants' feedback data – such as when there was staff turnover at an IAH practice. In CPC, the learning system contractor's regional practice coaches often incorporated feedback data in their one-on-one work with practices who needed more assistance.

More common forms of one-on-one learning support related to data provision included phone calls and emails – often in response to questions submitted through a helpdesk. This type of assistance with specific questions or issues could be considered a form of tailored learning support because model participants can get answers from the model's data experts for questions they submit based on their level of data sophistication.

5.1.6 In-person meetings

Approximately a third of the models in the study reported making feedback data a significant agenda item as part of a regional or model-wide in-person meeting facilitated by the learning system. Such meetings ranged from one day to multiple days. Learning system meetings in CCTP, for example, extensively featured the use of feedback data. In-person meetings for the ACO models' learning system typically included a session on the data dashboard, as well as a kiosk to allow attendees to sign up for dashboard access and test out its features. In addition to in-person meetings, some models also held virtual meetings.

5.1.7 Repackaged reports

In two models we studied, the learning system contractor repackaged feedback data in alternative formats intended to make the data more actionable for model participants. In CPC, the regional learning faculty repackaged the feedback data in a more summarized format, with an emphasis on a small number of graphs and trends. The repackaged data was popular with practices and played a role in increasing practices' engagement with the data. This repackaging effort occurred as part of an overall increase in emphasis on the feedback data approximately two years into the model. In CCTP, the learning system contractor developed a quarterly Key Performance Measure Analysis (KPMA) report, as well as several other reports and scorecards, to complement the Quarterly Monitoring Report (QMR) that the implementation contractor already produced for model participants. Whereas the QMR was formatted as a static PDF file, the KPMA report evolved into an Excel workbook that emphasized interactions between key metrics in the model and gave users the capability to run what-if scenarios related to model goals. While it was not clear if model participants always knew what to do with the KPMA report relative to the QMR, the additional reports created by the TA contractor were an important element of the learning system's overall emphasis on the use of data in the model.

5.1.8 Connect sites

Half of the models in the study, primarily more recent models, used the CMS Connect website developed by LDG. Connect is an online knowledge management and collaboration site that included several functionalities that supported data provision:

- A library allowed archiving of data-related webinars and other learning system materials, which helped model participants access and review these materials even when they were not able to the original, "live" TA event.
- A chat function facilitated discussion threads related to the data provided, with posts by model participants as well as relevant CMMI staff and contractors. Some discussion threads were open to all model participants, while others could be limited to members of a data affinity group, for example. Several model teams worked proactively to increase participants' use of the Connect site for peer-to-peer discussions.

- A calendar on Connect notified model participants of upcoming TA events related to data provision.

5.1.9 Newsletter articles

While it was not a major component of data-related TA, two current models include periodic newsletter articles as another way to increase engagement with feedback data. HHVBP's newsletter occasionally includes a "By the Numbers" section that provides a brief explanation of some aspect of the data presented in the quarterly feedback report. CEC's newsletter includes a "Dashboard Corner" feature that highlights some aspect of the online data dashboard.

5.1.10 Helpdesks

All of the models included some type of helpdesk function through which model participants could submit questions or comments. In some models, there was one centralized helpdesk that triaged all issues submitted and, when necessary, forwarded the issue to the relevant subject matter expert, such as questions on web portal access or feedback data. Other models have included a dedicated helpdesk function related to data provision (e.g., an email address for submitting questions directly to the contractor responsible for producing data in the model). Key informants reported that model participants valued being able to interact directly with data experts when necessary to resolve a question, and that the helpdesk often served as the channel for triggering that interaction. Some model teams also viewed helpdesk queries as a useful, informal source of feedback from participants about data provision.

5.2 Design and implementation of learning support for data provision

Across the models included in our study, there was variation in the overall design and implementation of learning support related to data provision. One dimension of variation concerned the relative training roles for the contractor producing the data and the learning system contractor. A related issue concerned differences in how much communication occurred between these contractors. A third difference concerned the timing of data-related training activities over the course of the model. Some models were also more proactive in actively soliciting feedback from participants on whether they wanted more learning support related to use of data. Finally, models differed in how much they tried to help participants learn to use the data from CMS in their operational workflows and decision-making.

5.2.1 Contractor roles and communication in data-related learning support

In some models, such as BPCI and CCTP, the contractor responsible for producing data for participants was also heavily involved in some or most of the training events concerning that data (such as delivering webinars when new quarterly reports were released). By contrast, in some models, the data producer(s) had little or no role in TA. For example, in CPC, the contractor producing the feedback data had no role in delivering learning events to the practices in the model; instead this role was filled solely by the model's learning system contractor. The training role for the contractor producing feedback data was also limited in FQHC APCP. The contractor producing the feedback data was involved in a few webinars when the first report was released, to introduce the web portal and the feedback data. After that point, the data contractor's involvement with learning support was limited to responding to questions or issues submitted via a helpdesk. A key reason for this limited role in FQHC APCP was that many model participants did not reach the model's core goal of NCQA accreditation as a Level 3 PCMH until very late in the model, and therefore TA activities focused heavily on supporting this objective, rather than use of the CMS data.

Regardless of who delivered the actual learning events related to data provision, a related difference among some models concerned the degree of internal communication encouraged by CMMI between the contractor producing the data and the learning system contractor. Greater opportunities for communication between the various contractors is something that many of our key informants thought would be helpful, for two reasons:

- First, the contractor producing the feedback reports and data might have insights or ideas that would be useful to the learning system contractor in planning learning activities related to the data.
- Second, the learning system contractor might be in a better position to hear feedback from participants about the data, which in turn could be shared with the data producer(s) for potential refinements.

In HHVBP, for example, the model team holds a weekly 30-minute meeting that includes all of the contractors supporting the model and provides them a valuable opportunity to share issues and feedback.

5.2.2 Timing of learning activities supporting data provision

The FQHC APCP example above also highlights another consideration for model teams: how much to prioritize use of data as a TA topic, relative to many other topics for which model participants may require TA. Model participants do not have unlimited time or attention to devote to learning system events, especially in the first six to twelve months of a model, during which time model participants are often focused on meeting basic model implementation requirements. Many participants may not be able to devote much attention to feedback data until they have gotten past an initial start-up phase of model implementation. For example, CPC executed a conscious "pivot"– about 18 to 24 months into the model – in which the model added a new requirement for practices to demonstrate use of feedback data and the learning system increased its emphasis on the data. On the other hand, in some models, participants viewed the data from CMS as essential to initial model implementation and wanted to engage with the data as early as possible. For example, in Pioneer, many of the ACOs wanted to work with their Medicare claims data as early as possible because of the data's potential value to the ACOs for understanding their patients' utilization and costs.

5.2.3 Learning needs assessments (LNAs)

Several models learned during their first year of performance that participants needed more help with data, and as a result increased their data-related TA in year 2. For several models, conducting an annual LNA served as an important tool for identifying such needs and prioritizing relevant learning system activities, especially once model participants had begun receiving data. These LNAs often included surveys or interviews of model participants, and models that included more targeted questions on data-related TA needs found this specificity to be helpful.

5.2.4 Learning support related to operational use of the data

While it was common for models to provide at least some TA on introductory topics, such as how to access the CMS data and understanding the basic content of the reports, models varied significantly on whether, or how much, they tried to help participants learn to use the data in their operational workflows and decision-making. The CCTP learning system, for example, was quite proactive in emphasizing operational uses of feedback data throughout its activities, including development of numerous additional data products to complement the original feedback reports provided to participants. One of these learning system products was an interactive Excel workbook that allowed users to conduct "what if" scenarios to highlight the potential impacts of different strategic decisions. In OCM, the TA contractor facilitated a data affinity group that helped train participants in using the CMS data to support quality improvement. In FAI, CMS made available a TA contractor to work one-on-one with states on how to integrate the Medicare data on dual eligible beneficiaries with the state's own Medicaid data, including development of "use cases" to illustrate potential applications of the data. In CPC, the TA contractor provided practice coaches who integrated the feedback data into their one-on-one discussions with the physician practices they were assisting. In contrast, some models provided little or no training on how to use the CMS data operationally – sometimes due to constraints on model resources or scope, competing TA priorities, or scalability concerns.

To the extent that models did provide support regarding operational use of the data, peer-to-peer learning was widely viewed as especially effective in this area. Opportunities for peer-to-peer learning on uses of the CMS data included all-participant webinar presentations by high-performers, user groups, in-person meetings, and discussion threads on the Connect site.

6. Data Uptake and Reasons for Use or Non-Use

This chapter addresses the several study questions related to data uptake and reasons for participants' use or non-use of the data.

Key Findings

- *There was considerable variation among models in the uptake of feedback reports and other data files.*
- *Models with high data uptake had financial or other strong incentives for participants to track their performance, high levels of data-related learning support, and data that recipients perceived as useful and actionable.*
- *Uptake of more granular data, especially claims-level data, was higher when model participants had the expertise to work with this more challenging, but richer, data.*
- *Common uses of the CMS data included: monitoring performance, confirming aligned patients, identifying patients in need of care coordination, identifying opportunities for quality improvement, attempting to validate or predict financial results, and analyzing patients' utilization outside the organization.*
- *Common reasons that caused data to be less useful, or not used, included: time lag, the size or complexity of some reports or files, exclusion of data on treatment of substance use disorders, lack of guidance on how to use the data, small sample sizes, and lack of aggregated multi-payer data.*

Key Considerations

- *Models can consider providing early education to participants on both the limitations and the strengths of claims-based data. Sharing illustrative uses can stimulate participants' planning.*
- *Uptake of data tends to be higher when participants have some form of accountability.*
- *In models with significant multi-payer involvement, aggregated multi-payer data are more useful to participants. However, data aggregation requires significant collaboration and investment by payers. Alignment of data specifications and formats can be a less difficult step, although then users still have to deal with separate reports or files from each payer.*
- *Soliciting feedback about the data and making refinements can also make the data more useful.*

6.1 Factors that encouraged uptake of the data

There has been wide variation in the uptake of feedback reports and other data files among the models, as shown in ***Exhibit 6-1*** (with additional detail in ***Appendix A***). Factors that contributed to higher uptake included high levels of learning support related to use of the data, strong incentives for participants to track their performance, and data that recipients perceived as useful and actionable. By contrast, in two models with low uptake (FQHC and MAPCP), participants viewed the data as having low utility, use of feedback reports was not part of practice workflow, and practices received little training about the data. In two other models with lower uptake (SIM and HCIA), difficulty or restrictions in obtaining the data limited uptake.

To encourage the use of data, models relied on active provision of learning activities related to the data, as discussed in detail in Chapter 5. In addition to robust TA, however, participants needed an incentive or type of accountability to use the data. For example, in models where participants had financial incentives tied to performance (e.g., shared savings in IAH, or financial reconciliations in BPCI, CJR, Pioneer, NGACO, and OCM), there were high levels of data uptake. CCTP held participants accountable by terminating low performers, which stimulated participants' interest in the performance data provided by CMMI. In CPC, accountability came in the form of an operational requirement, added for years 3 and 4, to demonstrate use of the data in order to remain in the model.

Another way some models promoted use of the data was by making refinements to the reports or data based on feedback from model participants. Some models were proactive in soliciting such feedback. For example, in CPC, FQHC APCP, MAPCP, and Pioneer ACO, the evaluation contractors asked model participants about their use of CMS data during site visits. The CPC evaluation contractor also included questions about use of the feedback data in an annual survey of practices in the model. In BPCI, after release of the first five quarterly feedback reports, the contractor producing the reports conducted a one-time survey about them.

In contrast to these more effective types of encouragement, key informants noted that simply pointing out to participants that they were not accessing the data did not seem effective in motivating increased engagement. This type of interaction may help increase awareness of the data, but if awareness already exists and participants are still not accessing the data products, then cajoling does not seem to be effective.

Within some models, there was also variation in the uptake levels for specific types of data products. For example, in CEC, all participants have demonstrated use of the online dashboard, but uptake of claims-level data has been more mixed (as discussed in Chapter 4). Similarly, in CJR, a member of the model's data affinity group commented that hospital-level quarterly monitoring reports were helpful for hospitals that did not have consultants assisting them with claims-level data. In MAPCP, practices tended to view the beneficiary-level data file as more useful than the practice-level report, because the beneficiary-level data could be used to identify candidates for care coordination (Nichols et al., 2016, p. 2_13). Thus, uptake of more granular data could be high when model participants had the expertise, or could access the expertise, to work with this more challenging but richer data.

Exhibit 6-1. Data Uptake Among Model Participants

Model	*Data Uptake*	*Factors Influencing Uptake Level*
Bundled Payments for Care Improvement (BPCI)	Medium to high	•Although most respondents in a survey reported some use of the Awardee Feedback Reports, CMMI staff did not believe awardees were actually using the feedback reports much, based on informal interactions with awardees •High uptake of the payment reconciliation data, which were more timely, more granular, and directly relevant to the awardee's financial result in the model
Community-based Care Transitions Program (CCTP)	High	•Participants viewed the data as useful and actionable •Strong incentive to monitor performance because low performers were terminated from the model
Comprehensive ESRD Care (CEC)	High	•High uptake for most participants who are affiliated with large dialysis chains and have access to corporate resources to work with claims-level data, but smaller participants struggle with these files •All participants demonstrate use of the online dashboard •Financial risk for Part A/B services incentivizes participants to care about performance and data
Comprehensive Care for Joint Replacement (CJR)	High	•Hospitals view the CMS data as necessary for tracking and analyzing episode costs and post-acute care utilization
Comprehensive Primary Care (CPC)	Medium to high	•Uptake increased after CMMI added a requirement on use of the data and the learning system increased its emphasis (Peikes et al., 2016) •High percentages of practices were reviewing their Medicare reports by Year 3, but their views on usefulness were mixed (Peikes et al., 2016)
Financial Alignment Initiative (FAI)	High	•Claims-level data are valuable for care coordination and program integrity efforts •Model provides high levels of data-related TA to states •Monitoring reports are useful for overseeing managed care plans
Federally Qualified Health Center (FQHC) Advanced Primary Care Practice	Low	•Little TA provided on the data •Limited awareness of the data until late in the model, and FQHCs said the cost and utilization reports were not useful (Kahn et al., 2016)
Health Care Innovation Awards (HCIA), Rounds 1 and 2	Low to medium	•Approximately 40%-50% of awardees requested CMS data •Only data extracts provided, and awardees complained about the lack of timeliness in requesting data and getting approval
Home Health Value-Based Purchasing (HHVBP)	Medium	•Significant outreach to identify POCs for use of the data portal •New webinar held each quarter on how to use the feedback report •Some participants have not found the reports easy to understand or useful, and participants have other, existing sources of data
Independence at Home (IAH)	High	•Model's shared savings component meant practices had a financial incentive to care about their performance and their data
Multi-Payer Advanced Primary Care Practice (MAPCP)	Low	•There was little TA on how to use the data, and use of feedback data was not part of practices' normal workflow
Medicare Care Choices Model (MCCM)	Low to medium	•47% of participants downloaded their initial report, but the model team thinks fewer are actually using the data thus far
Oncology Care Model (OCM)	Medium to high	•High interest by practices in receiving data and reports, but considerable heterogeneity in terms of practices' data sophistication •An estimated 33%-50% of practices have hired a data consultant
Pioneer ACO and Next Generation ACO (NGACO)	High	•Financial risk incentivizes attention to performance and data •Participants have resources to work with claims-level data
State Innovation Models (SIM) Initiative, Rounds 1 and 2	Low	•States complained about the time required to request data and receive approval • States' Medicare data requests under SIM are limited to research purposes

Notes: See ***Appendix A*** for additional detail on model-specific uptake.

6.2 Reasons for use or non-use

While uses of the data provided by CMS varied within and across models, common ways that model participants used the data included:

- tracking progress on key goals,
- confirming aligned or attributed patients for model purposes,
- supporting care coordination,
- attempting to validate or predict financial results in the model,
- identifying opportunities for quality improvement,
- analyzing patients' utilization of providers outside the participant organization, and
- self-evaluation.

Our key informant interviews indicated that these uses of the data were largely consistent with CMMI expectations for how the data would be used.

As indicated in ***Exhibit 6-2***, across the models as a whole we found that the different levels of data provided supported many of these common uses, depending on the circumstances of the model and the participants' level of expertise with the data. Model-specific details on reasons for use of the data are outlined in ***Exhibit 6-3***.

Exhibit 6-2. Common Participant Uses for Different Levels of the CMS Data

Uses of the data	***Participant-level data***	***Beneficiary-level data***	***Claims-level data***
Performance monitoring	✓	✓	✓
Confirming attributed or aligned patients		✓	✓
Validating or predicting financial results	✓	✓	✓
Identifying patients for care coordination		✓	✓
Identifying quality improvement opportunities	✓	✓	✓
Analyzing patients' utilization outside the organization	✓	✓	✓
Self-evaluation	✓	✓	✓

As noted previously, financial incentives were often a key motivator in data uptake and usage. Consequently, patient attribution and alignment files were very important for ACO models, episode-based models, and primary care models. Data files identifying attributed beneficiaries were particularly important in models that relied on complex, claims-based attribution algorithms. In episode-based models, participants often wanted to use the Medicare data to validate CMMI episode prices or financial reconciliation results. In CPC and IAH, some participants used expenditure data in the feedback reports to try to predict if they would qualify for shared savings.

Some model participants relied on these data to support care coordination efforts. For example, CEC participants reported using claims-level data to identify cases for care management and improve care coordination and home care to avoid admissions and readmissions. In several primary care models, beneficiary-level data helped practices identify “frequent fliers” or other high-risk patients who could benefit from care coordination. While claims-based data have too much time lag to serve as the initial source of information on hospitalizations or ED visits, some participants found the CMS data to be helpful for retrospectively identifying gaps in internal data or real-time data sources.

The data from CMS also gave model participants visibility of their patients’ utilization of providers outside the participating organization. In episode-based models (e.g., BPCI, CJR), claims-level data helped model participants examine factors driving their episode costs, including the type of care, place of service, and provider characteristics. In ACO models, participants used the data from CMS to learn about patient leakage to providers outside of the ACO. In episode-based models and ACO models, claims-level data allowed participants to analyze post-acute care (PAC) use for their aligned patients, to help reduce PAC utilization and costs.

Participants in several models (e.g., BPCI, CJR, Pioneer, and NGACO) worked to merge claims-based data provided by CMS with internal EHR data. For example, many Pioneer ACOs interviewed for CMMI’s model evaluation mentioned building data warehouses to accomplish this integration, often with help from consultants or vendors (Green, 2015, pp. 46–64). The potential value of this type of data integration was also noted in the OCM model, where in a peer-to-peer presentation, one physician practice stressed the importance of participants getting started with a system to link clinical data from an EHR with claims data. Related to this integration of claims-based and clinical data, we saw evidence in several models (e.g., CJR, Pioneer, NGACO, and OCM) of participants using the data received to create reports to monitor physician performance and then sharing those results with physicians.

In SIM and HCIA, claims-level data from CMS helped some participants design or evaluate their diverse interventions.

Despite participants’ interest in receiving data and the multiple uses of the data, ***Exhibit 6-3*** also highlights reasons some model participants did not use the data or found the data less useful, including:

- time lag associated with claims-based data,
- the size and complexity of some reports or data files, especially claims-level files,
- exclusion of substance abuse treatment data at the beneficiary- or claims-level (as well as patients who opted out of data-sharing),
- small sample sizes,
- difficulty in incorporating claims-based feedback data into normal workflows, and
- lack of aggregated multi-payer data.

These challenges for using the data are described in more detail in prior chapters, with the exception of participants' desire for aggregated multi-payer data in some models. In MAPCP and CPC, which were multi-payer models, physician practices wanted aggregated multi-payer data and were frustrated by receiving different reports by payer. Particularly in MAPCP, this appeared to be a major reason for very low use of the data. Providing multi-payer data requires collaboration by the payers involved and significant investment of time and resources, but the resulting data is more useful to participants in a model with a large enough multi-payer component. In CPC, three regions (CO, OK, OH/KY) were able to achieve aggregated multi-payer reports by the end of the model, although it was a protracted process for CMS to participate (Peikes et al., 2016). A major reason for the delays involved constraints on CMS establishing contracts and sharing PHI/PII data with the data aggregation vendors selected by the other payers in the respective regions. Some MAPCP states (e.g., VT) were also able to develop multi-payer reports using claims from CMS and other participating payers. For multi-payer models that do not choose to pursue data aggregation, alignment (i.e., standardization) of data specifications and formats across payers' reports can be a less difficult step, although data recipients still have to deal with separate reports or files from each payer.

Exhibit 6-3. Reasons for Use and Non-Use of the CMS Data Among Model Participants

Model	*Reasons for Use of Data*	*Reasons for Non-Use of Data*
Bundled Payments for Care Improvement (BPCI)	• Awardees used payment reconciliation data to analyze PAC utilization outside the hospital (SNF utilization, etc.) • Many Awardees used the lagged CMS data for validation of real-time internal data and to track trends over time • Top uses of the Awardee Feedback reports: 1) comparing to internal analyses or monitoring performance, 2) informing care redesign, and 3) sharing with physicians or other staff	• Awardee Feedback reports were less timely and less granular than the payment reconciliation data
Community-based Care Transitions Program (CCTP)	• Used QMRs to measure and track their progress on key goals • Highlighting of interactions among key metrics in the KPMA report led some sites to recognize the need for more staff	• CBOs complained about the time lag in the QMR data because they wanted to evaluate changes they were making more quickly • Sites were not always sure what to do with the KPMA report relative to the QMR report
Comprehensive ESRD Care (CEC)	• Tracking performance related to the financial risk for Part A/B services • Monitoring monthly list of aligned patients • Two large participants used claims-level data to improve care coordination and home care, to identify cases for care management, and to create physician dashboards	• Overall volume of data is daunting for some participants • Time lag • Exclusion of behavioral health/substance abuse and beneficiary opt-outs make data less useful • Smaller participants lack resources and expertise to work with the claims-level data
Comprehensive Care for Joint Replacement (CJR)	• Implementing data dashboards that merge CMS claims data with internal data • Sharing scorecards with surgeons and PAC providers • Tracking and analyzing episode costs and PAC utilization (identifying high-volume SNFs, ALOS for SNFs, etc.) • Many hospitals use consultants to help with the data	• Some participants have had trouble working with the detailed claims data files

Model	*Reasons for Use of Data*	*Reasons for Non-Use of Data*
Comprehensive Primary Care (CPC)*	• Some CPC practices used the beneficiary-level data for care coordination and quality improvement • Some practices tried to use the feedback data to predict shared savings, which was infeasible • Practices reported using practice-level reports more than the beneficiary-level reports • Practices viewed a one-time report on their patients' specialist utilization as especially useful	• Time lag – many practices wanted and expected data to help manage their patients near real time • Lack of multi-payer data (although three regions achieved aggregated reports by year 4) • Some practices perceived key outcomes as largely influenced by factors outside their control (hospitals, specialists, etc.) • Small sample sizes in some cases • Early on, there was some mistrust of the claims-based data, compared to EHR data
Financial Alignment Initiative (FAI)	• States and managed care plans use the Medicare claims-level data, in combination with Medicaid claims and other inputs, for care coordination and program integrity • The FAI operation contractor's monitoring report helps states oversee their managed care plans; also helps plans evaluate their own reporting	• The file format of a key claims data feed is difficult to use, although a software package can convert it to a more user-friendly format (the SDRC contractor provides TA on how to do this)
Federally Qualified Health Center (FQHC) Advanced Primary Care Practice**	• Some practices used the beneficiary-level data to meet NCQA requirements for having a patient registry • Used the biannual Readiness Assessment Survey reports to track progress towards NCQA requirements	• Most practices said the practice-level cost and utilization reports were not useful: 1) some did not know how to use the data, 2) data were only for Medicare patients, and Medicare is a small share of most FQHCs' patients • Little TA on the reports
Health Care Innovation Awards (HCIA), Rounds 1 and 2	• Self-monitoring and self-evaluation, to justify sustainment of their initiatives, and to complete required quarterly reports for CMS • Identify high-risk patients • Develop alternative payment models (APMs) as part of an initiative	• Larger awardees tended to have more data expertise than smaller awardees • Exclusion of substance abuse treatment claims sometimes created problems for awardees' trying to develop or analyze data for a comparison group
Home Health Value-Based Purchasing (HHVBP)	• Some participants appear to be using feedback data to make quality improvements	• More than 40% of respondents in one survey were either uncertain or did not find the feedback report easy to understand or useful • Participants have access to other quality data
Independence at Home (IAH)	• Practices used the lists of attributed patients, given the model's complex eligibility rules • Some practices tried to use the data to predict financial results, but CMS discouraged use for that purpose	• Time lag in the data and exclusion of substance abuse treatment claims frustrated practices
Multi-Payer Advanced Primary Care Practice (MAPCP)***	• Some practices used the beneficiary-level utilization data for care management (e.g., to identify "frequent fliers" or to follow up on ER users)	• The CMS reports were not multi-payer, although some states created their own multi-payer reports • Data lag • Use of the feedback reports was not part of a practice's normal workflow • Some practices preferred to rely on their EHR system for beneficiary-level data • Little TA on how to use the data – CMS had limited role in TA since MAPCP was state-sponsored • Exclusion of behavioral health/substance abuse claims – these were often patients who most needed care coordination • A lot of data volatility from quarter to quarter

Model	*Reasons for Use of Data*	*Reasons for Non-Use of Data*
Medicare Care Choices Model (MCCM)	• Low data usage thus far	•Low initial enrollment for many hospices; data with small N's are not useful
Oncology Care Model (OCM)	• Using claims data to identify key PAC providers for their patients • Learning about the share of patients admitted from ED visits • Analyzing hospital claims to learn the practice needed to improve its screening of patients for sepsis risk • Identifying end-of-life costs as an important area for further analysis • Developing internal physician-level reports	• In year 1 most participants may have focused on model requirements rather than feedback data • Heterogeneity among participants in terms of data sophistication
Pioneer ACO and Next Generation ACO (NGACO)****	•ACOs rely on the monthly lists of aligned patients • Most used data warehouses to integrate claims and EHR data • Many used a vendor/consultant to help with the claims-level data, especially in Pioneer, but in-house resources tended to grow over time • Many use the Medicare claims data to risk-stratify their populations and analyze where their aligned population is getting care • Some monitor physician performance and share these data with physicians • Use the online dashboard to compare to other ACOs, validate trends seen in their own data, identify areas for further investigation, and create internal targets	• In the first 18 months of Pioneer, delays in data and frequent format changes were a source of frustration for some ACOs • Exclusion of substance abuse treatment claims created challenges, especially for care coordination
State Innovation Models (SIM) Initiative, Rounds 1 and 2	•Usage limited to research purposes, such as design of APMs and states' self-evaluations of their SIM initiatives	• States are not allowed to use Medicare data for an operational purpose (such as providing feedback data to providers) • Some states' requests to use Medicare data in an all-payer claims database were denied as not meeting a SIM research purpose • States have complained about the time and effort required to request and receive approval for Medicare data • Some states do not see a need for Medicare data, because many SIM initiatives are focused on Medicaid or commercial payers • States vary in their data capability

* In addition to data collected for this study, sources on use and non-use in CPC include: (Peikes et al., 2016); (Gerteis et al., 2017).

** In addition to data collected for this study, sources on use and non-use in FQHC APCP include: (Kahn et al., 2016).

*** In addition to data collected for this study, sources on use and non-use in MAPCP include: (Nichols et al., 2016).

**** In addition to data collected for this study, sources on use and non-use in Pioneer and NG ACO include: (Green, 2015); (Green, 2016); (White et al., 2014).

7. Conclusion

Data provision and related TA can fulfill a vital role across models in allowing participants to use claims-based information to improve and monitor their performance. Model teams must balance limited resources in trying to provide data that are useful to most participants, but participants have variable data needs and capabilities – both within and across models.

Early communication with model participants on both the limits and strengths of the data available from CMS, and the resources needed to work with and use the data, can aid participants in making realistic plans for how they can derive value from the data. CMMI can also solicit feedback from participants about data content and related considerations, both at the onset of data provision and over the course of the model. Such feedback can help in maximizing model resources and in better targeting the data needs of participants, as well as refining the amount and types of TA that may be needed.

Looking forward, one key question is whether, or how much, a model should assist participants in learning to use claims-based data in their operational workflows and decision-making, relative to participants relying on their own resources or support from consultants. Further, with diffusion of EHRs and health information exchanges, integration of clinical data sources and claims-based data is likely to be a daunting but important learning need for many model participants. Promoting peer-to-peer learning activities can be particularly effective in this area.

This study has identified numerous considerations for improving provision of data and related TA. An additional question that may be of interest for CMMI's future research agenda concerns the effect of data provision, data uptake, and related TA on model outcomes. Model evaluations often face multiple challenges in assessing model outcomes and specific factors driving those outcomes, but to the extent it is feasible, quantitative findings on the impact of data provision and TA could prove helpful as future model teams strive to allocate their resources.

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Appendix A.

Model-Specific Findings

Summary of Model-Specific Findings for the CMMI Data Provision Study: Bundled Payments for Care Improvement (BPCI)

Description of model

Model focus: Episode-based payment for acute care hospitals stays and post-acute care (PAC); tests four alternative models

Type and approx. number of participants: Voluntary model with 286 Awardees as of Jan. 2017

- 227 of the Awardees can "initiate" episodes and 59 are non-initiating Awardee Conveners
- An additional 1,075 provider entities are episode-initiator partners of Awardees

Period of performance: Apr 2013 - Sep 2018

Description of data provision (within the study scope[12])

Types, frequency, and file format of data/reports

- The evaluation contractor for BPCI models 2, 3, and 4 produces Awardee Feedback reports in these models: Quarterly Excel workbooks including a Model Overview report covering all of the Awardee's episodes and up to nine Clinical Group Outcome reports with data specific to each clinical group of episodes for which the Awardee participates (e.g., surgical cardiovascular episodes)
    - Includes comparisons to the average of all participants in a given BPCI model, before and after risk adjustment
- The payment reconciliation contractor produces data files for models 2, 3, and 4: Monthly and quarterly claims-level and episode-level data in CSV format (can be imported into Excel or other software formats)

Distribution mode: Awardee feedback reports are downloaded from an evaluation website administered by the evaluation contractor and payment reconciliation data are downloaded from a CMS EFT portal

Description of TA/learning support related to the data provided

- The evaluation contractor delivered training webinars on their Awardee feedback reports in the early years of the model (for every quarter in which there were new participants)
    - Webinars were archived and mentioned when announcing each new quarterly report
- In the early years of the model, the program team and the payment reconciliation contractor delivered webinars on the payment reconciliation reports and held office hours calls in which the contractor was available to answer questions
    - CMMI also provided early webinars with basic information about Medicare claims data

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[12] The model 1 evaluation contractor produced quarterly reports for model 1 hospitals that relied on difference-in-difference regression analysis, from the model 1 evaluation, to report hospital-specific and model-wide utilization, cost, and mortality impacts relative to the evaluation's comparison group. However, the Data Provision Study scope excludes data/reports specific to model evaluation (including quarterly evaluation reports) or formal administration of the model (e.g., supporting data used for formal financial or quality results).

- Approximately two years into the model, the learning system facilitated a webinar with peer-to-peer presentations on using internal data dashboards to drive performance
- The first event in which the learning system contractor featured the Awardee Feedback reports occurred in May 2017
    - Used the feedback data to illustrate performance variation among the Awardees
- The evaluation and payment reconciliation contractors both produced technical guides for their reports and answer questions submitted through helpdesks

Uptake of the data

- In May 2016, the evaluation contractor analyzed download rates for the first five quarters' worth of feedback reports and found that 59% of the quarterly "overview" reports and 53% of the more detailed clinical group reports had been downloaded
- A survey in early 2016 had found that 78% of respondents said they used the evaluation contractor's Awardee feedback reports in some way, although a majority indicated they used the reports sometimes rather than often
    - The survey's 58% response rate made it difficult to judge whether the respondents were sufficiently representative
- Based on their informal interactions with Awardees, CMMI staff did not believe Awardees were actually using the evaluation contractor's Awardee feedback reports very much
- A very high percentage of Awardees appear to use the payment reconciliation data reports – one key informant estimated about 90% of the Awardees used these data

Reasons for use or non-use

- Awardees used baseline historical data to analyze PAC utilization outside the hospital (SNF utilization, etc.)
- Many Awardees use their own internal data for care coordination or real-time decision-making, and then use the lagged CMS data for validation and to track trends over time
- The payment reconciliation data are timelier than the Awardee feedback reports
    - The Awardee Feedback reports have about a one-year lag past the most recent quarter included in the report
- In the survey about the Awardee Feedback reports, the top reported uses of the report included:
    - Comparing to internal analyses or monitoring performance over time
    - Informing care redesign
    - Sharing with physicians, other clinical staff, BPCI care coordinators, or other BPCI staff

Other key findings for this model

- BPCI has five different websites for participants, including separate websites for accessing the payment reconciliation data and the Awardee Feedback reports
- Findings regarding the BPCI data portals included:
    - The CMS EFT portal for distributing the payment reconciliation data initially had trouble handling the very large files required for the largest Conveners

  - Files on the EFT site were only available to participants for 30 days
  - It was hard for the model team to troubleshoot issues with the EFT portal because the model team could not see the same view of the portal as a participant
  - Users are required to change passwords every 60 days, so every quarterly report requires a new log-in password

Summary of Model-Specific Findings for the CMMI Data Provision Study: Community-based Care Transitions Program (CCTP)

Description of model

Model focus: Adoption of best practices for care coordination as high-risk Medicare beneficiaries transition from inpatient hospital stays to home or other care settings

Type and approx. number of participants: Voluntary model with 47 community-based organization (CBO) awardees through 2012, expanded to a peak of 101 awardees in 2013, fell to 18 by the end of the model

- Of the 47 earlier awardees, 36 were an Area Agency on Aging, an Aging/Disability Resource Center, or both; the other 11 were hospitals, community coalitions, or other entities
- CBOs partnered with local hospitals

Period of performance: Feb 2012 - Jan 2017

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports

- Quarterly Monitoring Report (QMR) (PDF format): Included enrollment, the mix of intervention services provided, key utilization (e.g., ALOS, readmissions, ED visits), follow-up rates, etc.
    - Initially at the CBO-level, subsequently added detail for partner hospitals
    - Added comparisons to the average of model participants, in response to CBOs' feedback
    - Each QMR provided preliminary data on one quarter (with about a 4-month lag) and final data on the previous quarter (with about a 7-month lag)
- Key Performance Measure Analysis (KPMA) report (quarterly; originally a PDF but moved to Excel): the learning system contractor used QMR data to highlight drivers/interactions
    - The Excel version gave users a capability to run what-if scenarios
    - Lagged the QMR by 3 months
- The learning system contractor created other reports (e.g., scorecards for each CBO and their partner hospitals, readmission trend analyses, network diagrams showing high-volume partners)

Distribution mode: QMRs distributed through CMS-administered EFT web portal

Description of TA/learning support related to the data provided

- The contractor producing the QMR conducted webinars and CMMI had one-on-one phone calls following release of each QMR for the first several years
    - CBOs initially needed a lot of help with the QMRs
- The learning system contractor emphasized data throughout their events
    - Provided many other reports to complement the formal QMR feedback report
    - Learning collaborative meetings included in-depth discussions of data and peer-to-peer presentations involving data; featured high-performers
    - Facilitated a performance measurement workgroup
    - Hosted office hours
- Technical guides and helpdesks

Uptake of the data

- Key informants estimated that 90% of practices used the quarterly reports at least sometimes, and 60-70% used them actively

Reasons for use or non-use

- CBOs complained about the time lag in the QMR data because they wanted to evaluate changes they were making more quickly
- Despite the lag, key informants reported participants viewed the data as useful and actionable
    - CBOs used information from the QMRs to measure and track their progress on key goals
- The KPMA report's highlighting of interactions among key metrics led some sites to recognize they needed more staff to reach enough patients
    - Although sites may not have always known what to do with the KPMA report relative to the QMR report

Other key findings for this model

- The lack of archiving on the EFT portal as something that may have hurt usage of the QMR data, although most CBOs downloaded their reports while available
- It was important that the model lead approved access to the underlying feedback data for the learning system contractor – allowed creation of several other reports
- CMS removed low performers from the model, so sites knew their performance data would affect whether they were renewed – made the feedback data very relevant

Summary of Model-Specific Findings for the CMMI Data Provision Study (DPS): Comprehensive Care for Joint Replacement (CJR)

Description of model

Model focus: Episode-based payment for hip and knee replacements

Type and approx. number of participants: Was launched as a mandatory model covering approximately 800 hospitals in 67 metropolitan statistical areas (MSAs)

- Approximately 600 hospitals actually had CJR episodes in the model's first year
- A rule published in Nov. 2017 reduced the number of mandatory MSAs and made the model opt-in for hospitals not in mandatory MSAs and for low-volume and rural hospitals

Period of performance: Apr 2016 - Dec 2020

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports: The monitoring contractor produces a quarterly hospital-level feedback report in HTML format and the payment contractor produces monthly episode- and claims-level data in CSV format (can be imported into Excel or other formats)

- The feedback report includes summary data on costs, quality, patient case mix and demographics, and compliance with model requirements
    - Highlights statistically significant differences relative to their target price for overall episode costs or relative to their historical baseline data for costs by type of service, utilization, quality, case mix
    - Buttons for exporting the summary data from tables and graphs into Excel
- Initially the detailed claims data files were provided quarterly, but in response to participant feedback the model team shifted the frequency to monthly

Distribution mode: A CMS-administered EFT portal

Description of TA/learning support related to the data provided

- Early in model year 1, the program team and the payment contractor delivered webinars and "office hours" on the detailed claims data files; the payment contractor also produced short videos on the data
    - One early webinar on Medicare claims data drew over 1,000 attendees and another drew almost 500; data-related office hours drew approximately 150-300 attendees
- In Jan. 2017, the program team and the monitoring contractor delivered a training webinar on the quarterly feedback report (prior to release of the first report in Spring 2017)
- The learning system contractor facilitated a Data Affinity Group, including sub-groups targeted to users with more or less data expertise
    - In April 2017, two members of the affinity group delivered a peer-to-peer webinar open to all participants on their use of data to identify cost and quality drivers
- The payment and monitoring contractors produced a technical guide and answered data questions submitted to a helpdesk

- Key informants reported that the Connect site for CJR included more chatter than in most other models, including on data issues

Uptake of the data

- More than 85% of hospitals covered by the model have accessed their data from CMS
- More than 95% of hospitals with an actual episode in year 1 had requested their data

Reasons for use or non-use

- In the Q3 2016 learning needs assessment (LNA) survey, 86% of respondents said they were implementing data dashboards
    - Some participants are working to merge CMS claims data with internal data
- Participants have described sharing data scorecards with their surgeons as well as plans to share data with post-acute providers
- Participants view the CMS data as necessary for tracking and analyzing episode costs and post-acute utilization (identifying high-volume SNFs, ALOS for SNFs, etc.)
    - One participant described analyzing claims data from CMS to learn that many patients were using multiple PAC providers – led to discussions with surgeons and SNFs
- Some participants have had trouble working with the detailed claims data files
    - Many hospitals also use consultants to help with the data
- One affinity group member noted the hospital-level quarterly monitoring reports are helpful for hospitals who do not have consultants helping with the claims data
- Data issues were the top TA need identified in the Q3 2016 LNA, including:
    - Technological tools to identify and track CJR patients
    - Technological tools to support data collection, analysis, or display

Other key findings for this model

- For authorizing participants' access to the data:
    - Identifying and contacting a POC for data at all the hospitals was difficult
        - This is a key start-up challenge in a mandatory model, because participants are not proactively applying to CMMI (as in a voluntary model)
    - The streamlined Data Request and Attestation (DRA) was a big improvement over the traditional Data Use Agreement (DUA)
        - Development of the DRA approach was initiated by a member of the CJR team who had worked on DUAs in BPCI
    - It also was efficient to make the hospital POC responsible for approving other local users (secondary POCs) for data access, subject to the usual CMS processes for creating user accounts
- For the hospital-level quarterly feedback report, the CJR team wanted a "less is more" approach
    - In contrast to the voluminous awardee feedback reports in BPCI
- Participants cited the precedent of monthly claims data in BPCI to push CMMI to shift to monthly, rather than quarterly, episode- and claims-level feeds in CJR

Summary of Model-Specific Findings for the CMMI Data Provision Study: Comprehensive ESRD Care (CEC)

Description of model

Model focus: Testing accountable care through two advanced alternative payment models (APMs) for Medicare beneficiaries with End-Stage Renal Disease (ESRD)

- CEC builds on the ACO experience from the Medicare Shared Savings Program, Pioneer and NGACO

Type and approx. number of participants: Voluntary model with 37 ESRD Seamless Care Organizations (ESCOs) (as of October 2017), including 33 Large Dialysis Organizations (LDOs), owned by three chains, and four non-LDOs

Period of performance: Oct. 2015 - Dec 2020

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports

- Monthly Expenditure and Claims Lag Report (Excel):
    - Provides aligned beneficiary counts and aggregate expenditures for the most recent month, an update of the previous month, and year-to-date
    - There is no claims run-out past the month reported, but the report includes a claims lag report (a claims triangle) for projecting incurred but not reported (IBNR) claims costs
    - Also shows data for a national reference population
- Quarterly Expenditure Report (Excel):
    - Content is similar to the monthly report
    - Released 3 months after the quarter to allow claims run-out
    - Can also be used to simulate savings/losses under hypothetical scenarios
- Claim and Claim-Line Feed (CCLF) report (monthly):
    - Very large raw data files that can be analyzed with a range of software
    - Includes all Part A, B, and D claims for aligned beneficiaries
    - Provided across the ACO models
- Monthly report of aligned beneficiaries (Excel)
- Online data dashboard:
    - Developed and updated by the learning system contractor
    - Includes aggregate cost, utilization, quality, and demographic data for the ESCO as compared to other ESCOs in the model (e.g., each blinded ESCO and 25/50/75 percentiles)
    - Can toggle to see risk-adjusted or not risk-adjusted
    - Model team receives monthly updates on ESCO log-in activity
    - Updated quarterly, with a 6-month lag (like in Pioneer)

Distribution modes: Reports distributed by EFT from web portals; online dashboard is a separate website

Description of TA/learning support related to the data provided

- The program team handles most training (webinars, calls) specific to the different financial reports
- The learning system contractor's data-related TA to date has mostly focused on the dashboard, such as an introductory webinar and a "dashboard corner" feature in the newsletter
- The learning system will have a Data Affinity Group scheduled for Spring 2018, which will include references to the dashboard, as well as ESCO discussion of general data issues/management
- Annual learning collaborative meetings typically include a data session
- A Medication Therapy Management (MTM) action group emphasizes quantitative data-related testing cycles by ESCOs to facilitate attempts to improve medication adherence and reconciliation
- ESCOs now participate with other ACOs in the CCLF users group
    - Two large ESCOs presented on their use of claims data in May 2017
    - Another LDO presented their use of claims data in September 2017
- Usage of the Connect site has been low thus far; however, the MTM action group continues to post on Connect as part of their collaborations on their action plans, which, in turn, has increased Connect usage for Summer/Fall 2017
- Other relevant TA: technical guides and a helpdesk

Uptake of the data

- The large participants, with more corporate resources, are heavy users of the claims-level data, but small participants have struggled with the CCLFs
- Based on monthly activity reports, all ESCOs demonstrate use of the dashboard

Reasons for use or non-use

- The financial risk for Part A/B services incentivizes ESCOs to care about performance and data
- The monthly list of aligned patients is very useful for the ESCOs
- Presentations by two large participants mention using the claims-level data to:
    - improve care coordination and home care to avoid admissions and readmissions
    - identify cases for care management
    - create physician dashboards
- Challenges mentioned by these large participants include:
    - data volume
    - time lag
    - differences between preliminary and ultimate attribution of patients
    - suppression of behavioral health/substance abuse data and beneficiary opt-outs
- Smaller ESCOs have expressed several concerns related to working with the CCLFs:
    - lack of resources to work with data

  - lack of guidance on how to use data
  - ability to manage the volume of data
- Dashboard users like the comparisons to other participants, but:
  - The LDOs would like to be able to see all their ESCOs in the same view, unblinded
  - Participants do not like the six-month lag in the dashboard data
  - The dashboard may be less appealing to some users because it involves maintaining another website user account

Other key findings for this model

- Data provision in CEC was largely taken from Pioneer ACO
- The behavioral health and substance abuse exclusion in the CCLFs is a significant problem as there is a high degree of behavioral health issues (e.g., depression) among ESRD patients

Summary of Model-Specific Findings for the CMMI Data Provision Study: Comprehensive Primary Care (CPC)

Description of model

Model focus: Primary care practice transformation

Type and approx. number of participants: Voluntary model with 439 primary care practices (as of Dec. 2016) in 7 geographic regions; 36 payers

Period of performance: Oct 2012 - Dec 2016

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports

- Quarterly practice-level feedback report (PDF format): For attributed Medicare FFS patients, included patient demographics, costs by type of service, and key utilization metrics (e.g., admissions, ED visits, readmissions)
    - Content evolved over time, partly in response to feedback from practices
    - Reported four-quarter averages rather than raw quarters
    - Compared the practice to the average of CPC practices in the region, after risk adjustment, and flagged differences of at least 20%
    - Used graphs to show trends and the distribution among practices in the region
    - Once a year also reported results from an annual patient experience survey
- Quarterly beneficiary-level data file (Excel): Identified attributed Medicare FFS patients and their costs by type of service, visit counts for primary care and specialists, and detailed information on admissions, ED visits, and readmissions
- Quarterly regional feedback report (PDF): Most of the content was simply an aggregation of the data in the practice-level reports for a given region
    - Compared the region to the average of all CPC regions or sometimes to each region
    - Also included graphs of the distribution of the region's practices for certain measures
- A one-time specialist report (Excel): Developed in 2016 in response to comments from practices

Distribution mode: Downloaded from a CMS web portal

- The first quarterly reports starting in April 2013 were distributed on an existing website that CMS used for a range of quality reporting programs, but performance for CPC was slow and prone to crashes
- By October 2013 the feedback data had transitioned to the new CPC web portal (Taylor et al., 2015, p. 54)
- The implementation contractor would upload the feedback reports to the portal

Description of TA/learning support related to the data provided

- Approximately two years into the model, the learning system increased its emphasis on use of the feedback data
    - This was described as "a pivot", after initially focusing on more basic activities

- The regional learning faculty (RLF) began repackaging selected data from the feedback reports as brief summaries in Excel for use in regional webinars and learning collaborative meetings
    - Emphasized graphs/charts and trends
    - Given the model's regional structure and regional shared savings, it was important to have regional discussions of the data
- One-on-one practice coaching also incorporated the feedback data
- Technical guides
    - Added a hyper-link glossary feature to the reports late in the model, because questions made it clear that users were not reading the technical reference guide
- Connect site – Replaced an earlier TA website midway through the model
- The evaluation contractor producing the feedback reports provided a few early webinars to train the RLF on the reports, but did not deliver any webinars directly to practices
- Helpdesk

Uptake of the data

- Practice-level feedback reports: As of Year 3 (2015), 77% of practices reported reviewing practice-level Medicare reports always or most of the time, 16% sometimes, and 6% rarely/never/unaware of the data (Peikes et al., 2016, p. 43)
- Beneficiary-level data files: As of Year 3 (2015), 52% of practices reviewed beneficiary-level Medicare reports always or most of the time, 25% sometimes, and 22% rarely/never/unaware (Peikes et al., 2016, p. 43)
- Uptake of the Medicare feedback reports increased over time, especially after CMMI added a milestone requirement related to use of the data in year 3 and the learning system re-packaged the data and focused on it more

Reasons for use or non-use

- Usefulness of the practice-level reports:
    - As of Year 3 (2015), 35% of practices said the practice-level data were very useful, 55% somewhat useful, and 10% not very useful or not at all useful (Peikes et al., 2016, p. A.86)
    - These survey findings are consistent with the evaluation's qualitative findings from 21 deep-dive practices
- Usefulness of the beneficiary-level Excel data files:
    - As of Year 3 (2015), 28% of practices reported that the beneficiary-level data were "very useful", 54% "somewhat useful", and 18% "not very useful" or "not at all useful" (Peikes et al., 2016, p. A.86)
    - Some CPC practices used the beneficiary-level data for care coordination (e.g., identifying and following up with patients who had ER visits or were viewed as high-risk)
- While practices interviewed by the evaluation contractor said they would be especially interested in the beneficiary-level data, in their survey responses they reported actually using that data less than the practice-level reports

- CPC practices were more likely to report that the Medicare reports/data are useful than the reports/data from other payers
- Some practices tried to use the feedback data to predict shared savings, which was not feasible
- A lot of variation in data analysis capacity and resources among CPC practices
    - Some used the data for quality improvement and care management, some not at all
- Other factors weakening the usefulness of the data:
    - Time lag – many practices wanted and expected data to help manage their patients near real time (e.g., to learn about hospital admissions or discharges, ER visits)
    - Lack of multi-payer data – although three regions achieved aggregated reports by year 4
    - Some primary care practices perceived key outcomes (e.g., total costs, hospitalizations, etc.) as largely influenced by factors outside their control – hospitals, specialists, etc.
    - Small sample sizes in some cases
    - Early on, there was some mistrust of the claims-based data, compared to EHR data
    - Lacked the clinical detail needed to manage complex patients
- The one-time specialist data in 2016 was especially actionable, although practices still had a long wish list for refinements (e.g., identifying which specialists were cost-effective, etc.)

Other key findings for this model

- In CPC, production of the feedback data was a task for the evaluation contractor, but CPC+ is using a stand-alone contract specifically for feedback data reporting (separate from the evaluation contract or an implementation/monitoring contract)
    - TA related to the data will still lie predominantly with the learning system contractor
- The issue of whether to report distinct quarters or four-quarter averages highlighted a key question on what is a realistic purpose for the claims-based data that CMS is able to provide at the level of a primary care practice:
    - Practices want the data for timely feedback on changes they make and smoothing out recent quarters makes it harder for practices to see their most recent quarters' experience
    - On the other hand, quarterly data for a practice-level sample size may have too much "noise" to be an accurate signal of practice changes, in which case the data may be more useful to educate a primary care practice about costs and utilization outside the practice
- Regarding the format and display of the data, a lesson learned was that practices want summary data with a drill-down capability
    - CPC+ is initially producing an Excel dashboard in which clicking on a practice-level table or graph will move to the underlying beneficiary-level data; Phase 2 for the CPC+ report will be a business intelligence tool with more capability for drill-downs, data mining, and data visualization
- Lack of aggregated feedback data across payers was a key issue for most of the model
    - Three regions achieved aggregate reports by the end of the model (CO, OK, OH/KY), but it was protracted process for CMS to participate – especially to contract with the data aggregation vendors selected by the other payers in the respective regions

Summary of Model-Specific Findings for the CMMI Data Provision Study:
Federally Qualified Health Center Advanced Primary Care Practice (FQHC APCP) Demonstration

Description of model

Model focus: Primary care transformation among FQHCs – a key objective was NCQA recognition as a Level 3 patient-centered medical home (PCMH)

Type and approx. number of participants: Voluntary model that started with 503 FQHCs; fell to 434 FQHCs by the end of the model

Period of performance: Nov 2011 - Oct 2014

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports

- Biannual NCQA Readiness Assessment Survey (RAS) report (PDF format): highlighted the FQHC's results from the biannual RAS, including must-pass items
- Quarterly practice-level cost and utilization report (PDF):
  - Included patient case mix, inpatient and ED utilization, costs by type of service
  - Also included four quality measures for diabetes care and one for heart disease
  - Showed comparisons to the average of model participants, without risk adjustment
- Quarterly beneficiary-level utilization files (Excel): included patient demographics, HCC tier, utilization, costs, and claims-based indicators for diabetes, heart disease, and related tests

Distribution mode: Secure web portal (modeled after the MAPCP model portal)

Description of TA/learning support related to the data provided

- Webinars: limited to how to access the data portal and a walk-through of the report tables, including Q&A
  - There were only two of these webinars in March 2013 when reports were first released; webinars were then archived for download from the data website
- Technical guides
- Helpdesk

Uptake of the data

- Only 36% accessed at least one quarterly report by Q9 (first quarter of Year 3, fourth quarter with a feedback report available), although by the end of the model (Q12) 86% had logged in to access at least one report (Kahn et al., 2016, p. 52)
  - Actual awareness and use by staff or clinicians seemed lower in the model evaluation's site visits
  - Some FQHC POCs did not realize they were the data contact; thought emails about the feedback reports were spam and ignored them

    - Late in the model CMMI and the TA contractor raised awareness of the data portal (Kahn et al., 2016, p. 52)
- The model evaluation found that sites that were more advanced PCMHs at the start of the model were less likely than other sites to view at least five feedback reports over the course of the model (Kahn et al., 2016, p. 56)

Reasons for use or non-use

- Some practices used the beneficiary-level data to meet NCQA requirements for having a patient registry
- Used the biannual RAS feedback reports to track progress towards NCQA requirements
- In site visits, most said the practice-level cost and utilization reports were not useful (Kahn et al., 2016)
    - Some practices did not know how to use the data
    - Others said it was only for Medicare patients, and Medicare was a small share of most FQHCs' patients
    - Some practices also suggested it would have been helpful to have more TA on the reports (e.g., a learning system webinar)

Other key findings for this model

- Disagreement within CMMI on whether the model's TA contractor should devote resources and time for training on the feedback data versus focusing on issues for NCQA recognition, which was the core goal of the model
    - The contractor producing the feedback reports was not intended or resourced to provide significant TA
    - The Learning and Diffusion Group did not exist at the start of FQHC and TA in the FQHC model evolved significantly over the course of the model
- Providing feedback data without training on how to use the data was not effective

Summary of Model-Specific Findings for the CMMI Data Provision Study:
Financial Alignment Initiative (FAI)

Description of model

Model focus: Testing integration of services and financing for Medicare-Medicaid dual eligible beneficiaries

Type and approx. number of participants: Voluntary model operating in 13 states and serving more than 490,000 beneficiaries as of September 2017, including:

- 11 capitated model demonstrations in 10 states with a total of approximately 60 Medicare-Medicaid Plans (MMPs)
- two states with managed fee-for-service (MFFS) model demonstrations
- one state (MN) with an alternative model

Period of performance: Demonstration start and end dates are staggered; the first start date was July 2013 (for the WA demonstration) and the latest end dates are currently planned for December 2020

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports

- Raw claims data files (format and frequency varies):
  - Historical, monthly, and daily Medicare Parts A/B and D raw claims data for Medicare-Medicaid dual eligible beneficiaries (Part D not available daily)
  - File format varies for different feeds (e.g., historical vs monthly vs daily, and A/B vs D)
  - Recipients are state governments and MMPs
    - Specific data provided to state governments vary based on each state's data request, while MMPs get a standardized extract
- For capitated model demonstrations, the FAI operations support contractor provides monitoring reports for each reporting cycle (Word format) along with spreadsheets that contain the raw measure data (Excel format):
  - For each state with a capitated model demonstration, the report includes FAI core measures and/or state-specific measures for each MMP in the state
    - Reports include quarterly and/or annual data, contingent upon which measures were due during that reporting cycle
  - Examples of content include enrollment counts, percent of assessments within 90 days of enrollment, grievances (e.g., on access to care), appeals, behavioral health-related ER visits, and other quality-related measures
  - In addition to providing each MMP's measure rate(s), the reports show a comparison to the average rate for MMPs in the state
  - CMS's Medicare-Medicaid Coordination Office (MMCO) shares the monitoring reports and data spreadsheets with each demonstration's Contract Management Team (CMT), comprising CMS and state staff; the CMT then shares de-identified versions of the monitoring reports with individual MMPs

- For MFFS model demonstrations, the FAI operations support contractor provides annual monitoring reports for each state (Word format):
    - The reports include core and state-specific measure results, supplemental notes, eligibility and enrollment status, and methodological information
    - Examples of measures include all-cause readmissions, ambulatory care sensitive condition hospital admissions, hospital discharge follow-up, etc.
    - MMCO shares each monitoring report with the respective state

Distribution modes: Varies by data type — some claims data sent by electronic file transfer (EFT), historical A/B data sent on a physical drive, and monitoring reports distributed by email (not PHI/PII)

Description of TA/learning support related to the data provided

- A State Data Resource Center (SDRC) contractor provides TA to FAI and non-FAI states, mostly related to applying for Medicare data on Medicare-Medicaid dual eligible beneficiaries
    - Includes webinars (including peer-to-peer presentations by states), slide decks and technical guides, FAQs, on-demand video tutorials, a Medicare data workgroup, one-on-one support by email and phone, and one-on-one assistance with data request applications via a secure website for sharing documents
    - Some SDRC resources are available on a public website and others are only available to states once they register for the secure portion of the website
    - States value the direct, one-on-one support from SDRC
    - There is significant usage of the on-demand, archived video tutorials (6-8 minutes), which SDRC developed based on questions they were receiving
    - Peer-to-peer presentations by states on their experiences requesting and using Medicare are popular (one drew 22 states attending and another drew 20 states)
    - SDRC also provides TA for a software package to convert a cumbersome file format for the Coordination Of Benefits Agreement (COBA) claims feed
- A Medicare-Medicaid Data Integration (MMDI) contractor works one-on-one, on-site with demonstration states who want help integrating their Medicare and Medicaid data or learning how to use the data for specific types of analysis
    - MMDI “use cases” developed to help with different types of analyses are archived on the SDRC website
- For states participating in the MFFS model and MMPs participating in the capitated model, the FAI operations support contractor provides demonstration-specific webinars to review reporting requirements and answer questions about specific measure specifications
    - The operations support contractor also answers questions from MMPs via helpdesks and maintains a FAQs document for one MMP measure

Uptake of the data

- A majority of FAI states and MMPs are using Medicare claims-level data on dual enrollees
- All states and MMPs are routinely using the monitoring reports

Reasons for use or non-use

- States and MMPs use the Medicare claims-level data, in combination with Medicaid claims and other inputs, for care coordination (e.g., risk stratification, identifying key sub-groups of dual eligible beneficiaries) and program integrity (Wiener et al., 2017, p. 11)
- The file format of the COBA claims data feed is difficult to use, but a software package can convert it to a more user-friendly format – the SDRC contractor provides TA on how to do this
- The monitoring report helps CMTs monitor their MMPs; also helps MMPs evaluate their own reporting

Other key findings for this model

- FAI is the only model included in this study that provides a daily data feed to participants
- Despite the TA offered, states view data provision in FAI as complicated (requests, formats, etc.)
- MMCO added the SDRC and MMDI contracts as the need for more TA became apparent
    - There is some overlap in the type of TA provided by the SDRC for MMCO and CMS's ResDAC contract – CMS continues to review this issue
    - The deeper assistance offered through MMDI has been positively received by states, and the Innovation Acceleration Program added a task order to leverage it for their states
- MMCO was implementing in late 2017 a switch to the Data Request and Attestation approach used in several recent CMMI models as a streamlined alternative to the traditional Data Use Agreement

Summary of Model-Specific Findings for the CMMI Data Provision Study: Health Care Innovation Awards (HCIA), Rounds 1 and 2

Description of model

Model focus: Development and testing of new payment and delivery models, or expansion of existing efforts to new populations of patients, across the care continuum

- Diverse mix of awardees focused on behavioral health/substance abuse services, complex/high-risk patients, community resources, patients with specific diseases, hospital services, shared decision-making and medication management, and primary care redesign

Type and approx. number of participants: Voluntary model with 107 awards in Round 1 and 39 in Round 2; awardees include academic medical centers, non-profit or local public agencies, health plans, and other entities

Period of performance: Three-year performance periods but staggered start dates for awardees in each round; Round 1 comprises June 2012 - June 2016 and Round 2 comprises September 2014 - April 2018

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports: Claims-level extracts and person-level beneficiary data

- Not a standardized set of data; details of each awardee's data depend on the awardee's request
- Typically provided quarterly, but could request monthly if needed
- Formatted as fixed-column flat files

Distribution mode: Physical shipment of encrypted CDs or drives

Description of TA/learning support related to the data provided

- CMS's ResDAC contractor provides TA on applying for data, including selection of files/variables to request, the Data Use Agreement (DUA), and related documentation
    - Includes one-on-one assistance, a website, webinars, technical guides, HCIA-tailored documents (e.g., instruction letters, application documents), and a helpdesk
    - CMMI and ResDAC developed dedicated processes for HCIA data requests
- CMMI and the contractor producing the data for awardees answered data recipients' technical questions through monthly and then quarterly "office hours" calls, until attendance and questions waned
    - Then shared a FAQ document with awardees based on the office hours

Uptake of the data

- About 40% of R1 awardees and greater than 50% of R2 have requested CMS data
- Originally about 60-70% of Round 1 awardees expressed interest in data, but a significant share of those did not end up going through with the request, in part due to perceived barriers or constraints
- Awardees complained about the time involved in requesting data and getting approval

    - Kennell analysis of data provided by ResDAC in early 2017 (which may not include every HCIA data request) indicated that the average time from submission to approval was 6 months for new HCIA Research DUA requests, 4 months for new HCIA Operations DUA requests, and 3-4 months for amendments

Reasons for use or non-use

- Many awardees use the CMS data for self-monitoring and self-evaluation, to justify sustainment of their initiatives, and to complete required quarterly reports for CMS
- Some awardees used claims data to identify high-risk patients (Miller, 2014, p. 52)
- Some awardees may have used the Medicare claims data in developing alternative payment models as part of an initiative
- Larger awardees tended to have more expertise
    - Although often the individual submitting the data request had less data expertise (e.g., the overall project manager)
- Exclusion of substance abuse claims data sometimes created problems for awardees' trying to develop or analyze comparison group data
    - An awardee might have its own internal data on these conditions for patients in the intervention, but might be reliant on the CMS data for a comparison group

Other key findings for this model

- ResDAC was not involved at the start of HCIA, but the model team recognized a need for more support regarding data requests
- It would be helpful if awardees had a better understanding of the data request process and timeline up front
- There have been no issues with shipping the data to recipients, but for a similar future model, shifting to CMS's Virtual Data Resource Center (VRDC) would help alleviate physical IT security requirements

Summary of Model-Specific Findings for the CMMI Data Provision Study: Home Health Value-Based Purchasing (HHVBP)

Description of model

Model focus: Testing quality-based payment for home health agencies (HHAs)

Type and approx. number of participants: Geographic model covering all Medicare-certified HHAs in nine states; includes approximately 1,800 HHAs

Period of performance: Jan 2016 - Dec 2020

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports

- The implementation contractor and a central IT contractor produce a quarterly Interim Performance Report (IPR) with the HHA's scores for a series of quality measures that each contribute to a Total Performance Score
    - The implementation contractor produces a large underlying data file covering all the HHAs, which the IT contractor then converts into Excel workbooks that each HHA can download
    - The IT contractor also produces a version that each HHA can view online
    - For each measure, the report also shows the HHA's historical baseline score (for measuring improvement) and a benchmark score reflecting other HHAs in the state (for measuring absolute achievement)

Distribution mode: CMS-administered web portal

Description of TA/learning support related to the data provided

- With each quarterly IPR release, the learning system provides a new "Journey To Improvement" webinar on how to use the IPR data for quality improvement
    - In addition to general TA about using the IPR report, these webinars typically illustrate how to use specific data measures for quality improvement purposes
- The monthly newsletter occasionally includes a "By the Numbers" section that provides a brief explanation of some aspect of the IPR data
- Instead of a distinct technical guide for the IPR report, the model team distributes a FAQ document that includes Q&As on the IPRs
- Webinars related to the IPR and the data portal have averaged at least several hundred attendees per webinar, but given the size of the model this still accounts for a minority of the HHAs covered by the model

Uptake of the data

- Roughly 60% of the HHAs downloaded or viewed online the first (July 2016) IPR feedback report; no subsequent statistics are available

- Approximately 80% of the HHAs submit their required data measures, which could be viewed as a proxy estimate for the upper-bound percentage of participants engaged with the model data

Reasons for use or non-use

- More than 40% of respondents in one post-webinar survey were either uncertain or did not find the IPR easy to understand or useful
    - 70% agreed adding graphics to the IPR would be helpful
- Some participants appear to be using data to make quality improvements, but it is hard to isolate the role of the IPRs since participants also have access to other quality data, including Home Health Compare and Certification And Survey Provider Enhancement Reports (CASPER)

Other key findings for this model

- Regarding dissemination of the data:
    - Identifying and contacting a primary POC at more than 2,000 initial HHAs was difficult
        - This is a key start-up challenge in a geographic model, because participants are not proactively applying to CMMI (as in a voluntary model)
        - It took 8 months for the model team to determine primary POCs for 90-95% of the HHAs
        - The model team was surprised CMS did not have better contact information
    - It was efficient to make the primary POC responsible for approving other local users (secondary POCs) for data access, subject to the usual CMS processes for creating user accounts
        - This approach also allowed each HHA to determine how data provision would operate within their own infrastructure
    - Over 90% of respondents in a post-event survey reported they like being able to download their feedback report, rather than just viewing it online
- The model team would like to add graphs to the IPR, but any changes in the format must be implemented by the central IT contractor that creates the final reports on the website and the IT contractor's queue for supporting many CMMI models is determined by a change control board
    - The model team perceives even small changes in the IPR as difficult to implement
- Once a week the model team holds a 30-minute meeting that includes all of its contractors (the "Scrum of Scrums" meeting)
    - This meeting works well to share issues and feedback

Summary of Model-Specific Findings for the CMMI Data Provision Study:
Independence at Home (IAH)

Description of model

Model focus: Testing home-based primary care for high-need Medicare beneficiaries

Type and approx. number of participants: Voluntary model with 14 home-based primary care practices (as of Feb. 2017), including 13 independent practices and 1 consortium of practices

Period of performance: Jun 2012 - Sep 2017

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports: Quarterly practice report workbook (Excel)

- Beneficiary- and practice-level cost and utilization data for the latest quarter and current program year (with a 6-month lag); all data in the same workbook
- Lists of patients eligible for the model along with their reason(s) for eligibility
- At the practice level, also reports average number of days for a home follow-up visit after hospital discharge or ED visit (a key element of the intervention)
- No comparison data

Distribution mode: Encrypted email attachments, then recipients call for the password

Description of TA/learning support related to the data provided

- Conference calls with the practices are held when major changes are made to the workbook
  - Sometimes also walked through the data one-on-one with a practice when there were staffing changes
- Technical guide for the feedback report
- Helpdesk – Administered by the implementation contractor that produced the data

Uptake of the data

- All practices received the data and the model team estimated all but 1-2 were fully engaged

Reasons for use or non-use

- Although lagged, practices used the attribution data, given the model’s complex eligibility rules
- Model’s shared savings component meant practices had a financial incentive to care about their performance and their data
  - Some tried to use the data to predict financial results, but CMS discouraged that
- Time lag and exclusion of behavioral health and substance abuse claims were both frustrating

Other key findings for this model

- Initially provided only attribution data, but added cost and utilization data in 2016 (year 4) in response to practices’ requests
- It was hard to get participants to identify who should have access to the data; typically, it is not the primary POC for the site’s overall model participation
  - Model team also had to be proactive in asking about turnover among the data POCs

Summary of Model-Specific Findings for the CMMI Data Provision Study:
Medicare Care Choices Model (MCCM)

Description of model

Model focus: Testing a payment model allowing hospice-eligible Medicare beneficiaries to choose to receive hospice services along with their traditional care for their terminal illness

Type and approx. number of participants: Voluntary model with 100 Medicare-certified hospices as of Oct. 2017 (53 in Cohort 1 and 47 in Cohort 2 that starts Jan. 2018)

Period of performance: Jan 2016 - Dec 2020 (one cohort started Jan. 2016, a second starts Jan. 2018)

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports: Quarterly Aggregate Report in PDF format

- Series of tables presents enrollment, patient demographics, aggregated self-reported quality measures, and claims-based utilization measures
- Shows each of the last four quarters
- Hospice-specific reports compare the participating hospice to the average of all model participants

Distribution mode for hospice-specific reports: Website administered by the implementation contractor

Description of TA/learning support related to the data provided

- Delivered a webinar before releasing the first report
- Planning a webinar on quality improvement for Fall 2017, including use of data
- Monthly “Touch Point” webinars with small groups to discuss any issues of interest
- Developing an online chat forum (as of July 2017)

Uptake of the data

- 47% of participants downloaded their initial report, but the model team thinks fewer are actually using the data thus far

Reasons for use or non-use

- Many of the participating hospices have much lower model enrollment than originally expected
    - Data are not very useful yet for hospices with low enrollment (small N’s)

Other key findings for this model

- Originally wanted to use Tableau data visualization software, but dropped due to 508-compliance concerns

Summary of Model-Specific Findings for the CMMI Data Provision Study:
Multi-Payer Advanced Primary Care Practice (MAPCP)

Description of model

Model focus: State-sponsored multi-payer initiative to transform primary care practices

Type and approx. number of participants: Voluntary model with more than 800 primary care practices and community health teams in 8 states (VT, ME, NC, RI, NY, PA, MI, MN)

Period of performance: Jul 2011 - Dec 2016

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports

- Quarterly practice-level feedback report (PDF format): Included patient case mix, inpatient and ED utilization, costs by type of service, four quality measures for diabetes care and one for heart disease
    - Showed comparisons to the average of model participants in the state, without risk adjustment
    - Some states incorporated the reports into their own all-payer reports/portals; practices in other states accessed their reports directly through a secure website administered by CMMI's evaluation contractor
- Quarterly beneficiary-level data (Excel): list of attributed patients with demographics, HCC tier, utilization, costs, and claims-based indicators for patients with claims for eight different diseases
    - Also included information on tests for patients with diabetes and heart disease
    - Also included lists of patients "dropped" from attribution in most recent quarter
    - Some states incorporated the reports into their own all-payer reports/portals; practices in other states accessed their reports directly through the secure website administered by RTI

Distribution mode: Secure website administered by the MAPCP evaluation contractor or distribution of files to states for incorporation into state-specific portals

Description of TA/learning support related to the data provided

- Webinars: CMS and the contractor producing the data provided educational webinars on how to access the data on the MAPCP portal and basic education on the reports, such as using the filter buttons in Excel
- Technical guides
- Provided a document explaining how users can password-protect their beneficiary-level Excel reports once downloaded – Include this as a Best Practice
- A helpdesk (i.e., phone number and email inbox) staffed by the contractor producing the data allowed users to submit questions and comments about the reports

Uptake of the data

- Web portal statistics indicated that 35% was the highest percentage of practices logging in for any of four states in any of the four quarters of 2014 (excluding NY with its intermediaries downloading the reports for all practices in a region, and excluding NC, MI, MN who did not use the evaluation contractor's portal but accessed data through their own portals/reporting systems) (Nichols et al., 2016, p. 2_12)
- It was hard to get practices to access the portal – a sign they were not hungry for the data
  - Site visits also indicated low usage
  - CMMI did monthly calls with the states in which they shared portal statistics and identified practices not accessing their data, but did not help uptake much

Reasons for use or non-use

- Practices reported that the beneficiary-level utilization data "were the most useful because they could be used for care management purposes" (Nichols et al., 2016, p. 2_13)
  - Some practices used the data to identify "frequent fliers" or to follow up on ER users
- Reasons for non-use include:
  - The CMS-provided reports were not multi-payer – although some states (e.g., VT) did create their own multi-payer reports
  - Data lag – especially for the practice-level reports, which had a longer claims run-out
  - Use of the CMS reports was not part of a practice's normal workflow
  - Some practices preferred to rely on their EHR system for beneficiary-level data
  - Little TA on how to use the data – CMS had little role in TA because MAPCP was state-sponsored and also because the model was not ACA-funded and therefore did not have access to LDG contracts/support
  - Exclusion of behavioral health and substance abuse claims – these are often patients who most need care coordination
  - A lot of volatility in the data from quarter to quarter
  - The web portal required a separate log-in; some practices already had to log in to multiple portals for data and perceived another portal as burdensome

Other key findings for this model

- For authorizing participants' access to the data:
  - Important to identify at the start who is the right POC at the practice specifically for data, not for the participant's overall model participation
  - Updating authorized users, given turnover, was more difficult due to practices' low engagement regarding the data
- Regarding the data distribution mode:
  - Data portals should be designed to track/report what files get opened/downloaded and by whom, so model teams can routinely monitor basic uptake of the data
- Need to set realistic expectations early for participants on what kind of data they will get and what it can be used for (i.e., not real-time, not who was recently discharged or had an ED visit)
- Practices would have benefitted from more training on how to use the data

  - Data provision should be accompanied by training, soliciting feedback, making refinements, etc. to maximize use of the data
- It was efficient at that time to have the evaluation contractor provide the feedback data, although in more recent models this has been viewed as an implementation task

Summary of Model-Specific Findings for the CMMI Data Provision Study: Pioneer ACO and Next Generation ACO (NGACO)

This summary report for the Data Provision Study covers both Pioneer NGACO, given that the data reports and related TA that existed by the later years of Pioneer all continued in NGACO (albeit with a few refinements as discussed below), and the same contractors involved with data provision and TA in Pioneer are continuing those roles in NGACO. Further, several of the CMMI and contractor staff interviewed for this study were involved in both models and for efficiency those interviews discussed both models.

Description of models

Model focus: Testing accountable care through financial risk models designed to reward health care provider groups experienced in working together to coordinate care

Type and approx. number of participants

- Pioneer: Voluntary model that began with 32 ACOs and concluded with 19 through year 4 (2015) and 8 by the end of year 5 (2016), with some transitioning to NGACO
- NGACO: Voluntary model with 44 ACOs (as of Oct. 2017) representing a variety of provider organizations and geographic areas, including 18 that began participation as the initial NGACO cohort on Jan. 1, 2016

Period of performance

- Pioneer: Jan. 2012 - Dec. 2016 (three initial performance years and two optional one-year extensions)
- NG ACO: Jan. 2016 - Dec. 2020 (an initial three years for the cohort starting Jan. 2016, an initial two years for the cohort starting Jan. 2017, and two optional one-year extensions through 2020; in Dec. 2016 CMS announced a new opportunity to join the model effective Jan. 2018)

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports

- Claim and Claim Line Feed (CCLF) report (monthly):
  - Produced by the ACO-Operating System (ACO-OS) contractor
  - Very large raw data files that can be analyzed with a range of software
  - Includes all Part A, B, and D claims for aligned beneficiaries
  - Provided across the ACO models
- Monthly Expenditure Reports (MERs):
  - A package of four reports in Excel from the ACO-OS contractor, including a list of aligned beneficiaries, aggregate expenditure information for aligned beneficiaries by entitlement category and by provider network status, a claims triangle for estimating incurred but not reported (IBNR) claims costs, and provider-specific discounts for ACOs taking a population-based payment
- Quarterly Benchmark Report:

    - An Excel report from the program analysis contractor to help the ACO project its financial performance (actual expenditures versus the ACO's benchmark cost)
    - Based on feedback from Pioneer ACOs, NGACO shifted to reliance on an IBNR estimate so that this report could be released one month after the quarter
- Online dashboard (quarterly):
    - Developed and updated by the learning system contractor
    - Includes aggregate cost and utilization data in various service categories
    - Multiple comparisons to other participants (e.g., average, 25/50/75 percentiles, region, with and without risk adjustment) – the ACOs wanted comparison data
    - 6-month data lag in Pioneer that was cut to 3 months in NGACO
- SNF 3-day waiver report (quarterly): Also produced by the learning system contractor

Distribution modes: Most reports distributed by EFT from a web portal, with "push" and "pull" options

- Separate website for the dashboard

<u>Description of TA/learning support related to the data provided</u>

- The program team (with their contractors) handles most of the training related to their reports
    - Technical guides for each report, webinars on the benchmark report
- The learning system contractor provides TA for the dashboard and the SNF waiver report
    - The learning system is actively trying to promote the dashboard
        - In-person learning collaborative meetings typically have a session on the dashboard, including a team exercise where they use data from the dashboard, and a kiosk for signing up and trying the dashboard
- There is a CCLF users group that includes participants from multiple ACO models
- A Data Analysis Work Group (DAWG) started in Pioneer – mainly a source of feedback on the online data dashboard
    - Continued in NGACO, but meets less often and less of a role
- Pioneer did not have an annual learning needs assessment (LNA), but NGACO does
- Late in Pioneer, the learning system contractor tried creating a personalized assessment report for a few ACOs, based on data and interviews, but it took too much time and resources
- To promote the Connect site, the learning system shifted from newsletter attachments to posting documents on Connect

<u>Uptake of the data</u>

- Very high uptake, particularly for financial reports and the CCLF claims-level data
    - Most ACOs use the monthly claims reports
    - The Pioneer evaluator found that all 23 Pioneer ACOs still in the model in 2014 were using the Medicare claims data (Green, 2015, p. 43)
- Dashboard use is cyclical and surges quarterly when the data are updated
    - Over 80% of 2016 NGACO cohort used it during the first five months of 2017
- The SNF 3-day waiver report has been popular and recipients pay attention to the data

Reasons for use or non-use

- Site visits by the Pioneer evaluator indicated that in the first 18 months of the model, delays in data and frequent format changes were a source of frustration for some ACOs
- Pioneer ACOs also noted the exclusion of behavioral health and substance abuse claims as a problem, especially for care coordination (Green, 2016, p. 54; White et al., 2014, p. 13)
- Most Pioneer ACOs were using data warehouses to integrate claims and EHR data (Green, 2015, pp. 45–64)
    - Some ACOs monitor physician performance and share these data with physicians
    - Many ACOs use a vendor/consultant to help with the claims-level data, especially in Pioneer, but in-house resources tend to grow over time
- Many ACOs use the Medicare claims data to risk-stratify their populations and analyze where their aligned population is getting care
    - Post-acute care is a common area of interest
- ACOs have used the online dashboard to compare to other ACOs, validate trends seen in their own data, identify areas for further investigation, and create internal targets

Other key findings for this model

- Pioneer was an early model and both CMMI and the participants had a lot to figure out regarding CMMI's data provision, but lessons from Pioneer have informed NGACO, such as:
    - The mix and format of the reports
    - ACOs' preference for faster data over more accurate
    - The importance of providing monthly claims data
    - The need for help working with the claims-level data (from CMMI and vendors)
    - The need for an annual LNA
- Peer-to-peer learning activities are especially popular
- Financial risk in the ACO models incentivizes interest in the Medicare data

Summary of Model-Specific Findings for the CMMI Data Provision Study:
Oncology Care Model (OCM)

Description of model

Model focus: Episode-based payment for oncology physician practices

Type and approx. number of participants: Voluntary model with approximately 190 oncology practices and 14 payers

Period of performance: July 2016 - June 2021

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports

- Quarterly practice-level feedback report (PDF format):
    - Includes all patients who (as of the claims run-out) potentially could end up attributed to the practice
    - Cost and utilization data reported for four-quarter averages rather than raw quarters
    - After a simplified risk adjustment, practices are compared to: 1) the average of OCM practices and 2) the average of all practices in the nation with a threshold patient count
    - The use of potentially attributed patients and simplified risk adjustment avoids further data lag, but sometimes causes some confusion for practices
- Quarterly beneficiary- and claims-level files (pipe-delimited text format, can import to Excel)
    - Same data underlying the quarterly practice report
- Semi-annual episode- and claims-level data reflecting formal attribution and risk adjustment
- At the model start, also provided 3 years of historical baseline episode- and claims-level data
- Participants also received an Excel spreadsheet tool to predict the baseline cost of an individual episode by its attributes

Distribution mode: CMS-administered web portal linked to the Chronic Conditions Warehouse (CCW) system

Description of TA/learning support related to the data provided

- Data-related TA started early relative to some other models:
    - In the first three months, the program team and implementation contractor delivered two webinars on accessing and understanding the claims data and feedback reports
    - In June 2017, the learning system contractor delivered a webinar on the practice-level feedback reports, including two peer-to-peer presentations by practices
    - The learning system led an affinity group on using data for quality improvement
- The affinity group on quality measures and data group has active discussions on the Connect site
- Other TA: a technical guide, office hours, and a helpdesk

Uptake of the data

- More than 90% of the practices had completed the full on-boarding process to receive their data (as of July 2017)
    - Some practices have been late to gain access, and some practices complained about the security requirements for user accounts on the CCW-linked web portal
- At the time of our interviews in summer 2017, the model team had not received portal statistics on actual data downloads, but one key informant estimated that thus far 50-75% of practices had accessed their data and 25% were heavy users
    - Heavy users are more likely to be larger practices
- About 60% of practices attended a June 2017 webinar on the feedback reports (seems consistent with 50-75% having accessed their data)
    - Webinars are also available as recordings and transcripts for those unable to attend

Reasons for use or non-use

- In year 1 many participants may have been focused on model requirements rather than feedback data, but the model team expects more engagement in year 2
- There is considerable heterogeneity among participants in terms of data sophistication and other practice characteristics (size, etc.)
    - Some practices have indicated to CMMI that they do not know what to do with the beneficiary-level or claims-level data
    - An estimated 33%-50% of practices had hired a data consultant
- Examples of how practices have used the data include:
    - Using claims data to identify key post-acute care providers for their patients
    - Learning about the share of patients admitted from ED visits
    - Analyzing hospital claims to learn the practice needed to improve its screening of patients for sepsis risk
    - Identifying end-of-life costs as an important area for further analysis
    - Developing internal physician-level reports
- One practice stressed the need for a capability to link claims and EHR data

Other key findings for this model

- The model team included a practicing oncologist in developing the feedback reports
- Used the Data Request and Attestation approach initially developed by the CJR team as a streamlined alternative to a Data Use Agreement
- The model team made adjustments to the data in response to feedback from practices:
    - Added detail on high-cost drugs for each practice
    - Agreed to refresh earlier quarters' data
- Participants have asked for monthly data provision, but the model team responded that sample sizes would be too small and monthly would be too resource-intensive
- A stakeholder group representing oncologists asked CMMI to add physician-level reports, but CMMI declined, namely for three reasons:
    - CMMI views the model as a practice-level intervention

  - The patient attribution method only works at the practice-level
  - Practices could use the beneficiary- and claims-level data to develop their own physician-level reports
- Because most of the other payers in the model only participate for a small number of practices, there has been little interest in trying to develop aggregated multi-payer reports

Summary of Model-Specific Findings for the CMMI Data Provision Study: State Innovation Models (SIM) Initiative, Rounds 1 and 2

Description of model

Model focus: Design and testing of state-led plans for multi-payer payment and delivery models

Type and approx. number of participants: Voluntary model supported a total of 38 unique awardees (34 states, 3 territories, and Washington DC) over two rounds

- Round 1: 25 awardees – six of which were Model Test awards
- Round 2: 32 awardees – 11 of which were Model Test awards

Period of performance: Round 1 is Apr 2013 - Sep 2017 and Round 2 is Feb 2015 - Jan 2019

Description of data provision (within the study scope)

Types, frequency, and file format of data/reports: Claims-level extracts and person-level beneficiary data

- Not a standardized set of data; details of each state's data depend on the state's request
- Typically provided quarterly, but can request monthly if needed
- States can also request optional 5% national sample data to do their own benchmarking

Distribution mode: Physical shipment of encrypted CDs or drives

- CMMI had originally planned that states would access the data on CMS's Virtual Research Data Center (VRDC) system, but states did not want this approach

Description of TA/learning support related to the data provided

- CMS's ResDAC contractor provides TA on applying for Medicare data, including selection of files/variables to request, the DUA, and related documentation
    - Includes one-on-one assistance with state data requests, a website, webinars (including an August 2013 webinar on the state request process), technical guides, SIM-tailored documents, and a helpdesk
- The CMS contractor that produces the data answers recipients' technical questions about the data, but states have asked few questions
- A CMMI contractor provides TA for SIM states, but the scope does not include TA related to use of CMS data

Uptake of the data

- As of early 2017, eight states have requested Medicare data as a SIM request through ResDAC – amounts to approximately 20% of the total unique awardees
    - The eight states are a mix of Design and Test awardees from Round 1 and Round 2

Reasons for use or non-use

- States' Medicare data requests under SIM are limited to research purposes, such as design of alternative payment models (APMs) and states' self-evaluations of their SIM initiatives

  - States are not allowed to use Medicare data for an operational purpose such as providing feedback data to providers
  - Many states hoped to obtain Medicare data under SIM for inclusion in an all-payer claims database (APCD), but some requests were denied as not meeting a SIM research purpose
- States have complained about the time and effort involved in requesting and getting approval for Medicare data
  - Kennell analysis of data provided by ResDAC in early 2017 indicated that the average time from submission to approval for SIM data requests has been 6 months for new requests and 4 months for amendments
- Some SIM states do not see a need for Medicare data, given what they are trying to accomplish — e.g., many SIM initiatives are focused on Medicaid or commercial payers
- SIM states also vary in their data capability

Other key findings for this model

- The Qualified Entity (QE) program under MACRA may be another useful avenue for states interested in Medicare data for certain operational purposes, such as providing non-public feedback reports to providers
  - But see one state's view below that the QE request process is also onerous
- In September 2016 CMMI issued a Request for Information to solicit feedback on states' experience in SIM; among 18 state governments who responded, a handful of states voiced complaints about access to Medicare data in response to CMMI questions on data-sharing (Centers for Medicare and Medicaid Services, 2017)
  - West Virginia's response referred to "numerous" unsuccessful attempts to obtain data on Medicare beneficiaries who are not dual eligible beneficiaries
  - Utah reported "that it is surprisingly difficult to get access to Medicare Parts A and B data. There are too many hurdles, barriers, burdens, costs, and restrictions that stand in the way of ... incorporating those data into the [state's] APCD."
  - Utah also commented that "the Qualified Entity (QE) program, which was intended to provide a streamlined pathway to data access, is not a workable solution because of both the incredible burden required to request the data and the extreme limitations on the actual use of the data."
  - Washington state commented that "CMS could support state-based innovation and collaborative multi-payer payment models by facilitating more readily accessible and timely Medicare data."
- A lesson learned is the need to set better expectations for states regarding access to Medicare data

Appendix B.

Interview Coding Methodology

Key Informant Interview Coding Methodology for the CMMI Data Provision Study

For the key informant interviews conducted for this study, we used semi-structured interview protocols in which some questions were tailored for each specific interview, based on the secondary data we had already collected and the circumstances of each model. The interviews were voluntary and ranged in length from approximately 30 minutes to two hours. Each interview was staffed with at least two members of the project team, one to lead the discussion and one to take notes, although each interview was also recorded after obtaining the consent of the key informant. We produced modified-verbatim transcripts of each interview for coding purposes.

We coded each interview transcript using Nvivo 11 software and the codebook shown in ***Exhibit B-1***. Prior to the formal coding, we developed a draft of the codebook, conducted internal training on the interpretation and use of the codes, and then conducted three rounds of pilot tests to refine the codebook. We also submitted the draft and final codebook for review by CMMI. The list of codes included parent codes and, for some topic areas, more specific sub-codes. As indicated in the codebook, coders were encouraged to assign multiple codes to key informant responses that addressed more than one coding topic.

For each pilot test, the project director and two other members of the project team each independently coded the same interview transcript (using a different transcript for each round of pilot testing). After each of the first two pilot tests, we discussed differences in the coding results and made minor refinements to the codebook. The third pilot test achieved an overall inter-coder reliability score of 0.73, which met our target of approximately 0.70. We then divided all the interview transcripts between the two coders on the project team. The project director also reviewed the final coding results.

Exhibit B-1. Key Informant Interview Codebook

Parent Codes	**Sub-Codes**	**Description**
A. Initial Process, Roles		Includes threshold decision points (e.g., on whether or not to provide data) and the team's overall decision process (who was involved, whether they reviewed lessons from past models, etc.). May also include discussion of data types that were considered but not provided.
B. Content		
	B-1. Benchmarks	Issues related to benchmarks/comparison data (e.g., other model participants, national average, etc.).

Parent Codes	Sub-Codes	Description
	B-2. Data Types, Display	The level or type of data or aggregation (e.g. claims, PHI, aggregate), specific content (e.g., population, costs, utilization) and measures (e.g., rates, raw numbers, risk-adjusted, moving averages, etc.), the display/visualization of the data (e.g., tables, graphs, text), the organization of the report (e.g., sequence of the contents or sections, etc.).
	B-3. Sample Size, Censoring	Issues related to small sample size or censoring for other reasons (e.g., due to SAMHSA requirements or beneficiary opt-out). Also includes participant concerns about the usability of the incomplete data or their inability to reconcile with other sources of data (e.g., own EHR).
	B-4. Other Content Issues	If not covered by another sub-code in this area.
C. File Format, File Capability		The type of file format for the report/data provided (e.g., Excel, pdf, CSV, online dashboard, or any capabilities of the file/report such as interactivity, drill-downs, buttons to generate graphs, etc.
D. Frequency and Claims Lag		Facts or issues related to how often the data were provided (quarterly, etc.) and also time lag in the data (months of claims run-out, production time, etc.). Double-code when these issues were mentioned in feedback from participants, or affecting the use of the data, etc.
E. Multi-payer		Data provided by other payers or possible alignment/aggregation of data with other payers. As a general rule, do not need to double-code whatever specific topic (format, content, etc.) is discussed within the context of multi-payer.
F. Dissemination		
	F-1. Authorization	Related to authorizing model participants to gain access to the data (e.g., DUAs, DRAs, etc.).
	F-2. Distribution, IT	Distribution method(s) used (e.g., web portals, ETFs, email) and any issues related to the distribution method. For example, if the web portal for distribution creates IT constraints on the data content or format, double-code this code and whatever other topic is relevant.
	F-3. Other Dissemination Issues	If not covered by another sub-code in this area.

Parent Codes	Sub-Codes	Description
G. Uptake of Data		Comments on the share of participants accessing or using the data, the model team's ability to track this (including statistics or more impressionistic estimates/comments), and factors influencing uptake rates (participants' interest in the data, their capacity to work with data, financial incentives or other model requirements, voluntary vs mandatory models, etc.).
H. Use of Data		
	H-1. Intent	Examples of CMS's purpose for providing the data and how CMS expected the data to be used
	H-2. Actual Use, Actionability	How participants actually used the data, whether general comments on whether data were helpful/actionable or specific examples of use. However, comments on "whether" they are using the data, or what share use it, should be coded under Uptake (above). If participants just said a report was confusing, code as Feedback Data Types/Display; if they said that hurt actionability, then add this additional code for Actual Use, Actionability.
	H-3. Encouragement	Relates to whether/how CMS has tried to encourage use of the data--e.g., any incentives or requirements, having participants share their data experiences, etc. All data-related TA activities implicitly can be viewed as encouraging use of the data, so rather than double-code all data-related TA activities, we will simply review the TA-coded discussion as well.
	H-4. Users, Capabilities	Who uses the data within an organization, characteristics of participants who are more/less engaged with the data, comments on participants' data capacity or prior experience; also includes participants' use of consultants/vendors for data analytics. Double-code with a design code for comments that a specific design decision was influenced by expectations on user capabilities.
	H-5. Other Use Issues	If not covered by another sub-code in this area.
I. Technical Assistance (TA)		
	I-1. Participation	Participation in TA/learning system activities or resources, including comments on participation, any participation statistics/estimates, mechanisms used to track participation, etc.

Parent Codes	**Sub-Codes**	**Description**
	I-2. TA Types, Roles, Effectiveness	Types of data-related TA provided in the model (e.g. webinars, newsletters, office hours, helpdesks, FAQ sheets, in-person meetings, etc.), who provided the TA, and effectiveness of the data-related TA.
	I-3. Tailoring	Relates to offering different data-related TA activities/resources for different types of participants within the model (e.g., based on different needs or levels of expertise for different participants), such as offering one users group specific to novices and another users group specific to sophisticated users.
	I-4. Timing	Facts or issues related to when the model team offered data-related TA over the course of the model period, including how often.
	I-5. Other TA	If not covered by another sub-code in this area.
J. Feedback or modifications		Specific comments received, how feedback was obtained, and the team's reaction to feedback from participants--including any changes made as a result; also includes other data/TA modifications. Also use this code for participant/stakeholder input to initial report design (e.g., pilot tests). Double-code with TA Types, Roles, Effectiveness when comment addresses the effectiveness of TA in helping them use the data. Double-code with Actual Use when participants provided feedback on actionability of the data.
K. Wrap Up		Comments in the wrap-up section at end of interview, or at the end of certain sections (e.g., "looking back, ..."); if the wrap-up comments address a relevant code above then double-code for issue
L. Miscellaneous		For any issues not covered by any of the other codes.