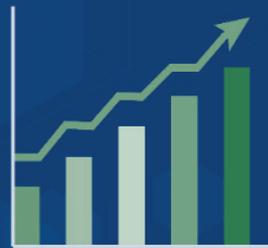


2015 | DATA USER'S GUIDE: GENERAL INFORMATION



Centers for Medicare & Medicaid Services (CMS)

Office of Enterprise Data and Analytics (OEDA)

Published: January 12, 2018

Data User's Guide: General Information - Version Control Log

Date	Version	Revisions
11/07/2017	1.0	Initial version published.
01/08/2018	2.0	<ul style="list-style-type: none"><li data-bbox="686 380 1422 457">▪ Edited Footnote in Exhibit 7.1.1 to provide additional detail on Respondent Types.<li data-bbox="686 464 1422 611">▪ Added a footnote in Exhibit 7.1.1 to note that the Residence Timeline segment is included in the 2015 Cost Supplement File LDS. Added Residence Timeline to exhibit 7.1.2 with footnote.

TABLE OF CONTENTS

ACRONYM LIST	vi
1. INTRODUCTION	1
2. GENERAL GUIDELINES FOR DATA USE	2
2.1 Data Access	2
2.2 Guidelines for Citation of Data Source	3
3. WHAT'S NEW FOR DATA YEAR 2015?	4
3.1 Sampling.....	4
3.2 Data Collection	4
3.3 Questionnaires	4
3.3.1 Overall.....	5
3.3.2 Dental Utilization (DUQ).....	5
3.3.3 Usual Source of Care/Patient Perceptions of Integrated Care (USQ/PPIC) ..	5
3.3.4 Income and Assets (IAQ)	5
3.3.5 Demographics and Income Questionnaire (DIQ)	5
3.4 Documentation.....	6
3.5 Data Processing.....	6
4. SURVEY OVERVIEW	7
4.1 Design of MCBS.....	7
4.2 Sample Design	8
4.3 Eligibility	10
4.3.1 Medicare Population Covered by the 2015 LDS	10
4.4 Case Types	11
4.4.1 Incoming and Continuing Cases.....	11
4.4.2 Community Interviews and Facility Interviews	11
4.5 Interviewing and Training Procedures	11
4.5.1 Overview of Data Collection.....	11
4.5.2: Interviewer Training	12
4.5.3: Privacy and Data Security	12
4.6 Completed Interviews	13

5. QUESTIONNAIRES.....	14
5.1 Overview	14
5.2 Community Questionnaire	15
5.2.1 Baseline Interview	16
5.2.2 Continuing Interview.....	18
5.2.3 Core Questionnaire Sections.....	20
5.2.4 Topical Questionnaire Sections	22
5.2.5 Community Questionnaire Section Rotation within a Data Year	22
5.3 Facility Instrument.....	24
5.3.1 Facility Baseline Interview	25
5.3.2 Facility Continuing Interview	26
5.3.3 Facility Continuing Core Sections	28
6. SAMPLING	29
6.1 Medicare Population Covered by the 2015 MCBS Data.....	29
6.2 Targeted Population and Sampling Strata	32
6.3 Primary and Secondary Sampling Units	33
6.4 Sample Selection	33
7. DATA PRODUCTS & DOCUMENTATION	35
7.1 Contents of Data Release	35
7.1.1 2015 MCBS Survey File	36
7.1.2 2015 MCBS Cost Supplement File.....	40
7.1.3 Using the Data	42
7.1.4 Research Claims Files.....	42
7.2 Which File Do I Need?.....	42
7.2.1 Survey File Only	43
7.2.2 Using Both Survey File and Cost Supplement File	43
8. TECHNICAL NOTES ON USING THE DATA	44
8.1 Merging Segments within 2015.....	44
8.2 Weighting	44
8.2.1 Preparing Statistics (Using the Full Sample Weights)	44
8.2.2 Item Non-Response	48
8.2.3 Imputation	48
8.3 Variance Estimation (Using the Replicate Weights).....	49

8.3.1 Variables Available for Variance Estimation.....	49
8.3.2 Variance Estimation for Analyses of Single Year of MCBS.....	49
8.3.3 Subgroup Analysis	49
8.4 Combining Multiple Years of Data	50
8.4.1 Longitudinal Analysis	50
8.4.2 Repeated Cross-Sectional or Pooled Analysis	51
9. REFERENCES	52
10. APPENDICES	54
Appendix A: Glossary.....	54
Appendix B: MCBS Rounds by Data Year and Season	58
Appendix C: Technical Appendix.....	59
Merging Segments within the 2015 Survey File LDS (Section 8.1)	59
Repeated Cross-Sectional or Pooled Analysis (Section 8.4.2)	60

LIST OF EXHIBITS

Exhibit 4.1.1:	2015 and Typical MCBS Data Collection Year.....	7
Exhibit 4.1.2:	MCBS Beneficiary Participation Timeline	8
Exhibit 4.2.1:	2010-2015 MCBS Rotating Panel Design	9
Exhibit 4.2.2:	2015 MCBS Composition of Panels in LDS Data Files.....	10
Exhibit 4.6.1:	2015 Completed Interviews	13
Exhibit 4.6.2:	2015 MCBS Fall Completed Interviews: Continuing and Incoming Panels.....	13
Exhibit 5.1:	MCBS Questionnaire Overview	15
Exhibit 5.2:	Overview of the MCBS Community Questionnaire Components	16
Exhibit 5.2.1:	2015 MCBS Community Questionnaire Flow for Baseline Interview	17
Exhibit 5.2.2:	2015 MCBS Community Questionnaire Flow for Continuing Interview	19
Exhibit 5.2.3:	2015 MCBS Community Core Sections by Data File and Administration Schedule*.....	21
Exhibit 5.2.4:	2015 MCBS Community Topical Sections by Administration Schedule.....	22
Exhibit 5.2.5:	2015 MCBS Community Questionnaire Section Rotation.....	23
Exhibit 5.3:	Overview of the MCBS Facility Instrument	25
Exhibit 5.3.1:	2015 MCBS Facility Instrument Flow for Baseline Interview	26
Exhibit 5.3.2:	2015 MCBS Facility Instrument Flow for Continuing Interviews....	27
Exhibit 5.3.3:	2015 MCBS Facility Core Sections by Data File and Administration Schedule*	28

Exhibit 6.1.1:	2015 Estimated Male Medicare Beneficiaries by Race and Age	30
Exhibit 6.1.2:	2015 Estimated Female Medicare Beneficiaries by Race and Age ..	31
Exhibit 6.1.3:	2015 Total Estimated Medicare Beneficiaries by Sex and Race	32
Exhibit 6.2.1:	2015 MCBS Sampling Strata	32
Exhibit 6.2.2:	2015 Panel of Selected Beneficiaries by U.S. Hispanic and U.S. Non-Hispanic Ethnicity Classification and Age Category	33
Exhibit 6.4:	2015 MCBS Sample Selection for the LDS Releases	34
Exhibit 7.1:	2015 Contents of Data Releases	36
Exhibit 7.1.1:	2015 MCBS Survey File Segments and Contents	37
Exhibit 7.1.2:	2015 MCBS Cost Supplement File Segments and Contents	41
Exhibit 7.2:	MCBS Populations in Data Products	43
Exhibit 8.2.1:	2015 MCBS Data Files Summary of Weights	46
Exhibit 8.4.1:	Constructing a Longitudinal Analytic File	50
Exhibit 8.4.2:	Constructing a Repeated Cross-Section or Pooled Analytic File	51

ACRONYM LIST

ACCESSCR	Access to Care segment
ACO	Accountable Care Organization
ACQ	Access to Care Questionnaire
ACS	American Community Survey
ADLs	Activities of Daily Living
ADMNUTLS	Administrative Utilization Summary
AGREESCL	Agreement Scale
ASSIST	Assistance segment
ATC	Access to Care
AVQ	Address Verification Questionnaire
BQ	Background Questionnaire
BRR	Balanced repeated replication (or Fay's method)
CAPI	Computer-Assisted Personal Interviewing
CATI	Computer-Assisted Telephone Interviewing
CAU	Cost and Use
CENWGTS	Continuously enrolled weights
CHRNCOND	Chronic Conditions segment
CMS	Centers for Medicare & Medicaid Services
CSEVRWGT	Cost Supplement File Ever Enrolled weights
CPS	Charge Payment Summary
DEMO	Demographics segment
DIQ	Demographics and Income Questionnaire
DME	Durable Medical Equipment segment
DUA	Data Use Agreement
DUQ	Dental Utilization Questionnaire
ENS	Enumeration Summary Questionnaire
EOBs	Explanation of Benefit Statements
ERQ	Emergency Room Utilization Questionnaire
ERS	Economic Research Service
ESRD	End-stage renal disease
EVRWGTS	Ever enrolled population weights
EX	Expenditures Questionnaire
FACASMNT	Facility Assessments segment
FACCHAR	Facility Characteristics segment
FAE	Facility Events segment
FALLS	Falls
FFS	Fee-for-Service
FOODINS	Food Insecurity segment
FQ	Facility Questionnaire
GENHLTH	General Health segment
HAQ	Housing Characteristics Questionnaire
HFQ	Health Status and Functioning Questionnaire
HHC	Health and Health Care of the Medicare Population
HHCHAR	Household Characteristics segment
HHQ	Home Health Utilization Questionnaire

HHS	Home Health Summary Questionnaire
HIPAA	Health Insurance Portability and Accountability Act
HIQ	Health Insurance Questionnaire
HIS	Health Insurance Summary Questionnaire
HISUMRY	Health Insurance Summary
HITLINE	Health Insurance Timeline segment
HMO	Health Maintenance Organization
HS	Health Status
IADLs	Instrumental Activities of Daily Living
IAQ	Income and Assets Questionnaire
ID	Identification
IN	Introduction Questionnaire
INCASSET	Income and Assets segment
INQ	Introduction Questionnaire
INTERV	Interview Characteristics segment
IPE	Inpatient Hospital Events segment
IPQ	Inpatient Hospital Utilization Questionnaire
IRB	Institutional Review Board
IRQ	Interviewer Remarks Questionnaire
IUE	Institutional Events segment
IUQ	Institutional Utilization Questionnaire
KNQ	Beneficiary Knowledge and Information Needs Questionnaire
LDS	Limited Data Set(s)
LEP	Limited English Proficiency
LNG3WGTS	Survey File longitudinal weights (2-year)
LNG4WGTS	Survey File longitudinal weights (3-year)
MA	Medicare Advantage
MAPLANQX	Medicare Advantage Plan Questions segment
MB	Medicare Beneficiary
MBQ	Mobility of Beneficiaries Questionnaire
MBSF	Master Beneficiary Summary File
MCBS	Medicare Current Beneficiary Survey
MCREPLNQ	Medicare Plan Beneficiary Knowledge segment
MDS	Minimum Data Set
MPE	Medical Provider Events segment
MPQ	Medical Provider Utilization Questionnaire
NAGIDIS	NAGI Disability segment
NHATS	National Health and Aging Trends Study
NICOALCO	Nicotine and Alcohol segment
NORC	NORC at the University of Chicago
NSQ	No-Statement Section Questionnaire
OASIS	Outcome and Assessment Information segment
OEDA	Office of Enterprise Data and Analytics
OM	Other Medical Expenses
OMB	Office of Management and Budget
OMQ	Other Medical Expenses Utilization Questionnaire
OPE	Outpatient Hospital Events segment
OPQ	Outpatient Utilization Questionnaire

PAQ	Patient Activation Questionnaire
PII	Personally Identifiable Information
PM	Prescription Medicine
PME	Prescribed Medicine Events segment
PMQ	Prescribed Medicine Questionnaire
PMS	Prescribed Medicine Summary
PMUSE	Prescription Medicine Usage segment
PPIC	Patient Perceptions of Integrated Care Questionnaire
PPO	Preferred Provider Organization
PREVCARE	Preventive Care segment
PS	Person Summary segment
PSQ	Post-Statement Charge Questionnaire
PSU	Primary Sampling Units
PNTACT	Patient Activation segment
PUF	Public Use File
PVQ	Preventive Care Questionnaire
RESTMLN	Residence Timeline segment
RH	Residence History
RIC	Record Identification Code
RXPARTD	Part D Drug Plan Experience segment
RXQ	Drug Coverage Questionnaire
SAS	Statistical Analysis System
SATWCARE	Satisfaction with Care segment
SCF	Sample Control File
SCQ	Satisfaction with Care Questionnaire
SNF	Skilled Nursing Facility
SS	Service Summary segment
SSN	Social Security Number
SSU	Secondary Sampling Units
STQ	Statement Section Questionnaire
US	Use of Health Services Questionnaire
USCPPIC	Usual Source of Care/PPIC segment
USDA	U.S. Department of Agriculture
USQ/PPIC	Usual Source of Care/Patient Perceptions of Integrated Care Questionnaire
USU	Ultimate Sampling Unit
VISHEAR	Vision and Hearing segment
VRDC	Virtual Research Data Center

1. INTRODUCTION

Medicare is the nation's health insurance program for persons 65 years and older and for persons younger than 65 years who have a qualifying disability. The Medicare Current Beneficiary Survey (MCBS) is a representative national sample of the Medicare population sponsored by the Centers for Medicare & Medicaid Services (CMS). The MCBS is designed to aid CMS in administering, monitoring, and evaluating Medicare programs. A leading source of information on Medicare and its impact on beneficiaries, the MCBS provides important information on beneficiaries that is not available in CMS administrative data and plays an essential role in monitoring and evaluating beneficiary health status and health care policy.

The MCBS is a continuous, in-person, multi-purpose longitudinal survey covering the population of beneficiaries, including both elderly enrollees and enrollees with disabilities, in the United States, District of Columbia, and Puerto Rico. Fieldwork for the first round of data collection began in September 1991; since then, it has continued to collect and provide essential data on the costs, use, and health care status of Medicare beneficiaries. Recently celebrating its 25th anniversary of continuous data collection, the MCBS has completed more than one million interviews provided by thousands of respondents.

The MCBS primarily focuses on economic and beneficiary topics including health care use and health care access barriers, health care expenditures, and factors that affect health care utilization. As a part of this focus, the MCBS collects a variety of information about the beneficiary, including demographic characteristics, health status and functioning, access to care, insurance coverage and out of pocket expenses, financial resources, and potential family support. The MCBS collects this information in three data collection periods, or rounds, per year. Over the years, data from the MCBS have been used to inform many advancements, including the creation of new benefits such as Medicare's Part D prescription drug benefit.

This inaugural issue of the MCBS Data User's Guide offers a publicly available, easily searchable resource for data users. Beginning with 2015 MCBS data, it will be updated for each new data year to ensure that users have current documentation on the survey design, methods, and estimation as well as MCBS data products. For questions or suggestions on this document or other MCBS data-related questions, please email MCBS@cms.hhs.gov.

2. GENERAL GUIDELINES FOR DATA USE

Each year, the MCBS data are made available to users as two Limited Data Sets (LDS) – the Survey File and the Cost Supplement File¹ – and a Public Use File (PUF). This Data Users' Guide focuses on the LDS releases, however information on contents and access to the PUF including a codebook and additional documentation can be found at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Downloadable-Public-Use-Files/MCBS-Public-Use-File/index.html>.

The LDS files contain beneficiary level health information, but exclude specific direct identifiers as outlined in the Health Insurance Portability and Accountability Act of 1996 (HIPAA). LDS files are considered identifiable, even without the inclusion of specific direct identifiers, due to the potential capability to link other sources of data creating an increased risk of re-identification of individuals. Since the information provided on an LDS is considered identifiable, it also remains subject to the provisions of the Privacy Act of 1974.

All requested LDS files require a signed LDS Data Use Agreement (DUA) between CMS and the data requestor to ensure that the data remain protected against unauthorized disclosure. LDS requestors must show that their proposed use of the data meets the disclosure provisions for research. The research purpose must relate to projects that could ultimately improve the care provided to Medicare patients and policies that govern the care. This type of research includes projects related to improving the quality of life for Medicare beneficiaries, improving the administration of the Medicare program, cost and payment related projects, and the creation of analytical reports.

The Survey File contains information on beneficiaries' demographic information, health insurance coverage, self-reported health status and conditions, and responses regarding access to care and satisfaction with care. The Cost Supplement File contains a comprehensive accounting of beneficiaries' health care use, expenditures, and sources of payment. Detailed descriptions of each file, including the contents of the files, file structure, information on new variables, key recodes, and administrative sources for select variables can be found in the complementary data file-specific documents (see MCBS Data User's Guide: Survey File and MCBS Data User's Guide: Cost Supplement File).

2.1 Data Access

In order to gain access to the LDS, data users must complete several steps. First, data users must sign and submit CMS' DUA and complete an LDS Worksheet. The DUA acknowledges the user's agreement to CMS' terms around data exchange, privacy, use, and storage. The LDS worksheet provides CMS with information about the research project, the specific files needed, and payment information for administrative fees associated with the data request. Note that new and repeat data users have distinct requirements and forms depending on the data request.

The cost for access to both the 2015 Survey File and 2015 Cost Supplement File is \$600 per year (\$300 for the 2015 Survey File only; the Cost Supplement File cannot be purchased separately). The processing of the DUA takes approximately six to eight weeks. Upon approval and payment, CMS releases the data within one week, depending on the size of the data request. Data users will receive the data on DVD or via the CMS Virtual Research Data Center (VRDC) for use with SAS[®] or other statistical software packages; each data release contains multiple files that are linkable through a key identification variable (BASEID).

¹ Note that the 2015 MCBS LDS files are renamed and reorganized from prior years. The LDS releases starting with data year 2015 are referred to as the Survey File (formerly Access to Care (ATC)) and the Cost Supplement File (formerly Cost and Use (CAU)).

For additional information on data access, data users can visit the CMS' LDS website at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/Data-Disclosures-Data-Agreements/DUA - NewLDS.html>.

Questionnaires, codebooks, and bibliographies for each survey year are available for download on the CMS' MCBS website at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/index.html>. A link to this documentation is also visible when approved data users log in to the VRDC.

2.2 Guidelines for Citation of Data Source

This document was produced, published, and disseminated at U.S. taxpayer expense. All material appearing in this document is in the public domain and may be reproduced or copied without permission; citation as to source, however, is appreciated.

Accordingly, CMS requests that data users cite CMS and the Medicare Current Beneficiary Survey as the data source in any publications or research based upon these data. Suggested citation formats are below.

Tables and Graphs: The suggested citation to appear at the bottom of all tables and graphs should read:

SOURCE: Centers for Medicare & Medicaid Services, Medicare Current Beneficiary Survey, [Data Product], [Year].

Bibliography: The suggested citation for the 2015 MCBS Data User's Guide should read:

SOURCE: Centers for Medicare & Medicaid Services. 2015 Medicare Current Beneficiary Survey Data User's Guide: General Information. Retrieved from [ADD URL], 2017.

Survey Data: The suggested citation for the MCBS survey data files and other documentation should read:

SOURCE: Centers for Medicare & Medicaid Services. Medicare Current Beneficiary Survey, Survey File data. Baltimore, MD: U.S. Department of Health and Human Services, 2015.

SOURCE: Centers for Medicare & Medicaid Services. Medicare Current Beneficiary Survey, Cost Supplement File data. Baltimore, MD: U.S. Department of Health and Human Services, 2015.

3. WHAT'S NEW FOR DATA YEAR 2015?

The MCBS files include two LDS releases and the PUF. Data users will notice that the 2015 MCBS LDS files are renamed and reorganized from prior years. The LDS releases moving forward will be referred to as the Survey File (formerly Access to Care (ATC)) and the Cost Supplement File (formerly Cost and Use (CAU)). The Survey File may serve as a stand-alone research file, however users of the Cost Supplement File will now require the Survey File for information on beneficiaries' demographic characteristics and health insurance information, as these fields are no longer included in the Cost Supplement File.

The data within the LDS releases are also reorganized into freshly named segments (formerly RICs). In this Guide, [Section 7.1: Contents of Data Release](#) provides a crosswalk from historical segments to 2015 segments. Data users can find a variable-level crosswalk on the CMS' MCBS website at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/index.html>.

Below data users will note highlights and updates for the 2015 data year.

3.1 Sampling

Sample eligibility: Beginning in 2015, beneficiaries who became eligible for Medicare Part A or B and enrolled anytime during the sampling year were eligible to be sampled as part of the annual MCBS panel. Prior to 2015, only beneficiaries who became eligible on or before January 1 of the sampling year were eligible to be sampled. Including the current-year eligible beneficiaries allows for delivery of data products up to one year earlier.

Census tracts replaced ZIP Code areas for Secondary Sampling Units (SSUs): Beginning in the Fall 2014, census tracts or groups of tracts, replaced ZIP Code areas as SSUs for the new panel selected and fielded each fall. See [Section 4: Survey Overview](#) for more information.

Hispanic oversample: Beginning in 2015, Hispanic beneficiaries living outside of Puerto Rico were oversampled for the MCBS. The main goals of the oversampling were to increase the number of Hispanic beneficiaries to allow for more precise estimates of health disparities experienced by these populations and to increase the proportion of MCBS Hispanic beneficiaries from outside Puerto Rico.

3.2 Data Collection

MCBS data collection contractor: Beginning in 2014, CMS contracted with NORC at the University of Chicago (NORC) to conduct the MCBS data collection. In 2014 and continuing into 2015, there were a number of contract transition activities that affected the traditional collection of MCBS data. As such, data files for 2014 will not be released and the annual data collection approach was modified in 2015 (for more information, see [Section 5: Questionnaires](#)). In addition, the MCBS implemented a series of innovations including reprogramming the instrument to include the use of 'look up' tools to enhance data collection and to improve data collection quality.

3.3 Questionnaires

Questionnaire section rotation: In 2015, the Winter and Summer rounds (Rounds 71 and 72) were combined into one longer round rather than two distinct data collection periods. This was a one-time alteration to the typical data collection protocol of three rounds of data collected annually – winter, summer, and fall. Consequently, for Winter/Summer 2015 (Round 71/72), the altered round structure affected the rotation of

some topical questionnaire sections. For information on the specific changes in rotation of questionnaire sections for 2015, please see [Section 5: Questionnaires](#).

Questionnaire content changes: There were a number of questionnaire sections that were revised in 2015. Data users can view the Questionnaire for each data year along with the questionnaire variable names and question text on the MCBS website at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/Questionnaires.html>.

3.3.1 Overall

- In a number of sections, question wording was revised; references to "doctor," "medical person," or "medical professional" were changed to "doctor or other health professional" for questions that ask about a specific visit, diagnosis, prescription, or other medical encounters.

3.3.2 Dental Utilization (DUQ)

- In Fall 2015, two follow-up items were added to the Dental Utilization Questionnaire (DUQ) for cases reporting no dental utilization. These items captured whether the respondent needed dental care but could not get it, and if so, the reasons why the respondent could not get dental care. For cases reporting a dental event, DUQ items were modified and added to capture the type of dental provider visited and the type of procedure received.

3.3.3 Usual Source of Care/Patient Perceptions of Integrated Care (USQ/PPIC)

- The existing USQ was integrated with parts of a PPIC instrument designed by Harvard researchers.² This change expanded the USQ with a series of questions that asks respondents about issues related to the integration of care that patients receive across providers.

3.3.4 Income and Assets (IAQ)

- A substantial change was made to the IAQ to get more detailed information from the respondents about their total income and assets. In general, MCBS adopted the wording and question format used in the National Health and Aging Trends Study (NHATS), which provided more detailed questions as well as probes for particular types of income and/or assets.³ Also, the response options that contain ranges for various income and asset questions was expanded to provide more detailed ranges.
- New food security questions were added to the end of the IAQ that were developed by the U.S. Department of Agriculture (USDA) Economic Research Service (ERS). These questions are used on many federal surveys that seek to measure food security (see <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools>).

3.3.5 Demographics and Income Questionnaire (DIQ)

- Two significant changes were made to the DIQ in Fall 2015.
 - ▶ In order to bring the Limited English Proficiency (LEP) measure in line with requirements of the Department of Health and Human Services uniform data collection standards, the order of the three

² Singer et al., "Development and Preliminary Validation of the Patient Perceptions of Integrated Care Survey," *Medical Care Research and Review* 70, no. 2.

³ National Health and Aging Trends Study. Round 1 Data Collection Instrument Sections, Income and Assets. https://www.nhats.org/scripts/instruments/40_IA_Round_1_Finalv2.pdf.

LEP questions was revised so that the "Primary Language" question came first and was asked of all Incoming Panel Sample respondents.

- ▶ Similar to the income and assets revisions in the new IAQ measures derived from the NHATS, the total income question asked of Incoming Panel respondents in the DIQ was revised to expand the categories and modify the ranges.

3.4 Documentation

MCBS Historical Data Documentation: MCBS data documentation for the Access to Care 1991-2013 and Cost and Use 1992-2013 is available on the CMS MCBS website at <https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/codebooks.html>. Zip files for each Release/Year contain the segment codebooks plus technical documentation.

MCBS Methodology Report: The 2015 MCBS Methodology Report provides an operational perspective on the collection of survey data for the 2015 MCBS data year. It complements the Data User's Guides with an overview of all activities carried out in support of the 2015 data files, including sampling, instrument design, interviewer training, data collection, data processing, and weighting.

MCBS Chartbook: CMS historically released two comprehensive data tables of estimates associated with each of the LDS release files, which are available on the CMS MCBS website at <https://www.cms.gov/research-statistics-data-and-systems/research/mcbs/data-tables.html>

Beginning with 2015 MCBS data, CMS will release a new Chartbook (following the release of the Cost Supplement File), which will include free downloadable charts for use by the research community.

3.5 Data Processing

Naming conventions and reorganization: Starting with the 2015 MCBS, the two annual releases are now referred to as follows:

- **Survey File (formerly Access to Care):** as before, this file contains survey data augmented with administrative and claims data to allow for analysis regarding beneficiaries' self-reported health status, health conditions, access to health care and satisfaction with health care.
- **Cost Supplement File (formerly Cost and Use):** as before, this file provides cost and utilization data and can be linked to the Survey File to conduct analysis on healthcare cost and utilization. Of note, previously select demographic fields were included in this file; but now the MCBS Survey File exclusively contains these data. Users will likely require both files to conduct most analyses.

Additionally, data file segments within the release are no longer referred to as RICs, but are now titled according to the topic of data included. See [Section 7: Data Products and Documentation](#) for a complete description of the file contents.

Data editing and imputation procedures: MCBS data files receive thorough editing and quality control checks prior to release. For more detailed information regarding data editing and imputation procedures conducted for the 2015 LDS releases, please consult the 2015 MCBS Methodology Report available on the CMS MCBS website.

4. SURVEY OVERVIEW

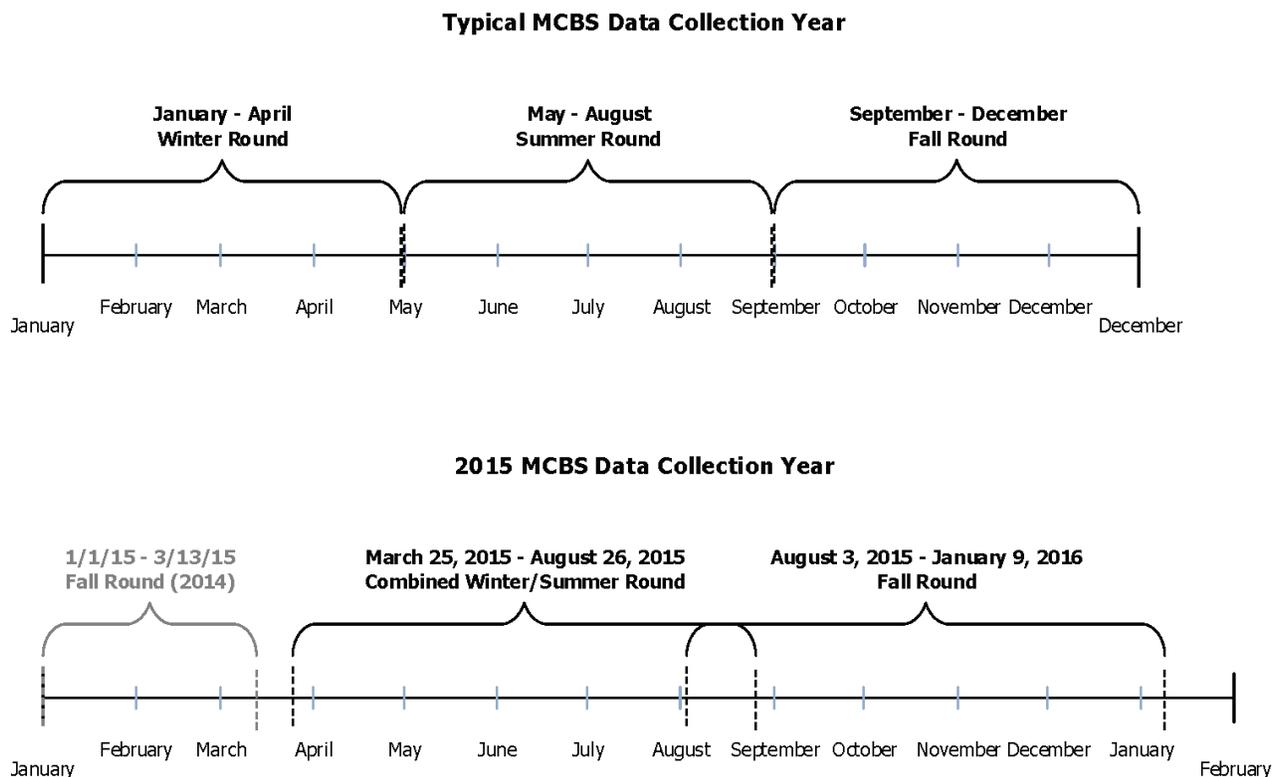
4.1 Design of MCBS

In its initial design, the MCBS was to serve as a traditional longitudinal survey of the Medicare population. There was no predetermined limit to the duration of time a beneficiary, once selected to participate, was to remain in the sample. However, this was later determined to be impractical, and beginning in 1994, participation of beneficiaries in the MCBS was limited to no more than four years.

Although limited to four years, MCBS data collection is continual throughout the year with three distinct seasons (i.e., rounds) of data collection per year. In general, the three rounds are: winter (January through April); summer (May through August); and fall (September through December). The primary reason for the round by round configuration (rather than interviewing on an annual basis) is to have shorter periods of recall during the year in order to capture more complete health care costs and utilization from beneficiaries.

In 2015, the traditional model of conducting the MCBS in three rounds was modified. Due to a transition period between contractors that began in 2014 and continued in 2015, additional time was required to complete the re-programming of all questionnaire sections. Therefore, the Fall 2014 round was conducted from September 2014 through March 2015; the Winter 2015 and Summer 2015 rounds were combined into a single, longer data collection period that was conducted from March 2015 through August 2015; and the Fall 2015 round was then conducted from August 2015 through early January 2016. Thus, the 2015 MCBS data releases reflect data collected from March 2015 through the first week in January 2016 (see Exhibit 4.1.1).

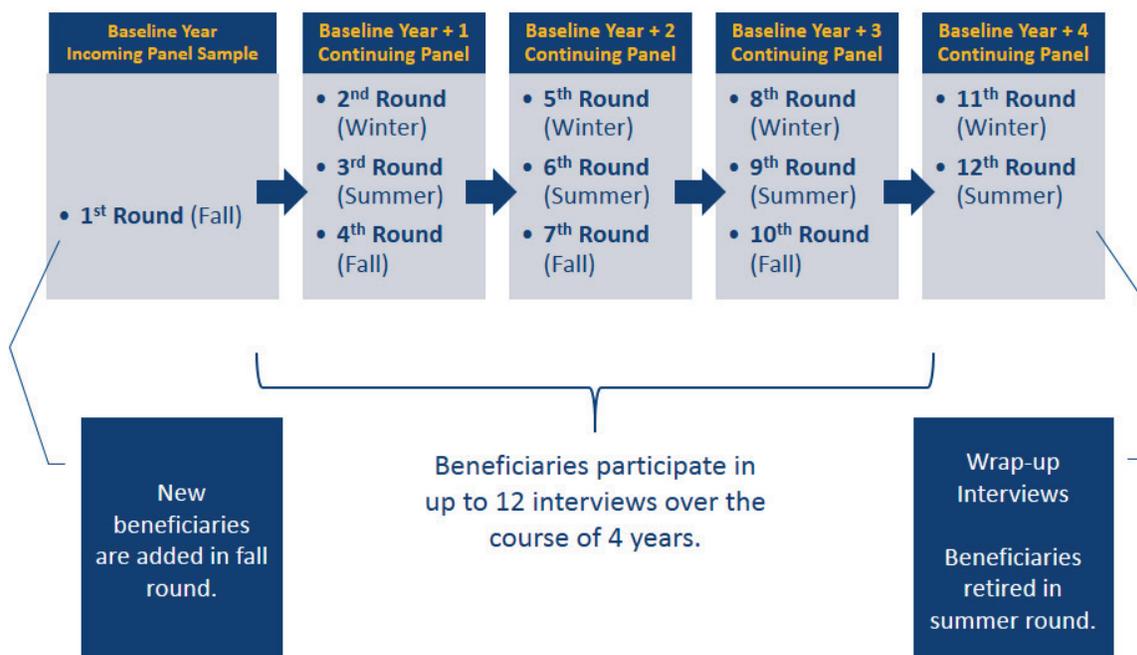
Exhibit 4.1.1: 2015 and Typical MCBS Data Collection Year



Initial interviews of newly-selected respondents take place in the fall round. Often the fall round begins early (i.e., late July or early August) to allow more time to conduct outreach and collect information from the new survey respondents who are selected to participate in the MCBS. That is, the early start of the fall round overlaps with the final weeks of data collection for the summer round. These small overlap periods as one round ends and another begins are acceptable design features of the survey. For example, the fall round usually extends into early January to allow for the completion of interviews that may have been postponed due to the holiday period.

Subsequent rounds, which occur every four months, involve the re-interviewing of the same respondent (or appropriate proxy respondents) until they have completed four years of participation (up to 12 interviews in total). Interviews are conducted regardless of whether the respondent resides at home or in a long-term care facility, using a questionnaire version appropriate to the setting. Exhibit 4.1.2 depicts the timeline of participation for respondents selected to be in the MCBS sample and Appendix B provides a list of all rounds by data collection year.

Exhibit 4.1.2: MCBS Beneficiary Participation Timeline⁴



4.2 Sample Design

The MCBS uses a rotating panel sample design, covering the population of Medicare beneficiaries residing in the continental U.S. (48 states and the District of Columbia) and Puerto Rico.⁵ Each sampled beneficiary is scientifically selected as part of a panel and is interviewed up to three times per year.⁶ One panel is retired during each summer round, and a new panel is selected to replace it each fall round (see Exhibit 4.2.1). The

⁴ Note that the 2015 data year had a modified schedule. See Exhibit 4.1.1.

⁵ Alaska and Hawaii are not included among the states from which the sample was selected due to the high cost of data collection in those areas; however, they are included in control totals for weighting purposes.

⁶ The three rounds per year are referred to seasonally. Respondents are interviewed in the winter round, the summer round, and the fall round each year.

size of the new panel is designed to provide a stable number of respondents across all panels participating in the survey annually.

Exhibit 4.2.1: 2010-2015 MCBS Rotating Panel Design⁷

Data Collection Schedule			Panel					
Data Year	Season	Round#	2010	2011	2012	2013	2014	2015
2010	Winter	56						
	Summer	57						
	Fall	58						
2011	Winter	59						
	Summer	60						
	Fall	61						
2012	Winter	62						
	Summer	63						
	Fall	64						
2013	Winter	65						
	Summer	66						
	Fall	67						
2014	Winter	68						
	Summer	69						
	Fall	70						
2015	Winter/Summer	71/72						
	Fall	73						

The MCBS employs a three-stage cluster sample design. Primary sampling units (PSUs) are made up of major geographic areas consisting of metropolitan areas or groups of rural counties. Secondary sampling units (SSUs) are made up of census tracts or groups of tracts within the selected PSUs. Medicare beneficiaries, the ultimate sampling units (USUs), are then selected from within the selected SSUs. The MCBS sample is annually “supplemented” during the fall round to account for attrition (deaths, dis-enrollments, refusals) and newly enrolled persons. Each annual supplement is referred to as the Incoming Panel Sample.

Prior to Fall 2001, respondents for the MCBS were drawn from a sample of 107 PSUs that had been selected in 1991 from the 48 continental U.S., the District of Columbia, and Puerto Rico. A second-stage sample of 1,163 SSUs defined by ZIP Code was initially drawn within those PSUs. The second-stage sample was expanded each subsequent year to represent newly created ZIP Code areas, ultimately increasing to 1,523 SSUs in Fall 2000. For Fall 2001, the PSU sample was updated and reselected in a manner that maximized overlap with the original PSU sample. Within the new sample of 107 PSUs, 1,209 SSUs were initially selected in Fall 2001. With the addition of new ZIP Code clusters in subsequent years, the number of SSUs increased to 1,250 by Fall 2013.

Beginning in Fall 2014, census tracts or groups of tracts replaced ZIP Code areas as SSUs for the Incoming Panel selected each fall. A sample of 703 tract-based SSUs was selected within the existing 107 PSUs in 2014; the SSUs were sized to support beneficiary sampling for approximately 20 years. The new tract-based SSU design was chosen because census tracts are more stable and change less often than ZIP Code areas, resulting in less required maintenance. An additional benefit is that tract-based units are more easily merged to federal survey data such as those published by the Census (e.g., decennial census data and the American Community Survey (ACS)).

⁷ Note that the 2015 data year had a modified schedule. See Exhibit 4.1.1.

Respondents for the MCBS are sampled from the Medicare Administrative enrollment data. The sample is designed to be representative of the Medicare population as a whole and by the following age groups: under 45⁸, 45 to 64, 65 to 69, 70 to 74, 75 to 79, 80 to 84, and 85 and over. Because of interest in their special health care needs, Elderly beneficiaries (age 85 and over) and beneficiaries with disabilities (age 64 and under) are oversampled to permit more detailed analysis of these subpopulations. In 2013 and 2014, an additional oversample of beneficiaries in Accountable Care Organizations (ACOs) was conducted, and beginning in 2015, an oversample of Hispanic beneficiaries was implemented.⁹ The MCBS sample is designed to yield about 14,500 completed cases annually in the MCBS Survey File and about 11,500 completed cases annually in the MCBS Cost Supplement File.

The beneficiaries included in the 2015 MCBS LDS releases represent a random cross-section of all beneficiaries who were ever enrolled in either Part A or Part B of the Medicare program for any portion of 2015. A subset of these beneficiaries represent a random cross-section of all beneficiaries who were continuously enrolled from January 1, 2015 up to and including interviews conducted during Fall 2015. The Survey File and Cost Supplement File represent four separate MCBS panels identified by the year in which the panel was selected and first interviewed (i.e., for 2015 LDS files, the 2012, 2013, 2014 and 2015 panels). Exhibit 4.2.2 shows the composition of each of the four panels included in the 2015 data files.

Exhibit 4.2.2: 2015 MCBS Composition of Panels in LDS Data Files

Data Year (Fall)	Number of Beneficiaries Selected
2012	7,400
2013	7,400
2014¹⁰	11,398
2015	8,504

4.3 Eligibility

4.3.1 Medicare Population Covered by the 2015 LDS

Beginning in 2015, beneficiaries who became eligible for Medicare Part A or B and enrolled anytime during the sampling year were eligible to be sampled as part of the annual panel. This is a substantial change in practice; prior to 2015, only beneficiaries enrolled in Medicare by January 1 of the sampling year were eligible to be sampled in an annual panel. More specifically, previously the MCBS would have waited until the 2016 panel to select beneficiaries who became eligible and enrolled during 2015 (e.g., those 'new' to Medicare). Thus, to estimate 2015 events, cost, and utilization would require the 2015 panel and all prior panels plus the new 2015 enrollees who were not sampled until the 2016 panel. Beginning in 2015, these beneficiaries were selected as part of the 2015 panel; thus, the Cost Supplement includes data using the 2015 panel as well as the 2012, 2013 and 2014 previous panels, without the need to use data from the 2016 panel.

⁸ The MCBS sample frame includes all aged individuals, but only individuals 18 and over are interviewed and included in the LDS files.

⁹ Note that once an oversample is implemented for a given fall round, those beneficiaries remain in the survey for four years.

¹⁰ Fall 2014 was the first round collected by NORC after the contract transitioned from the prior incumbent of data collection following a transition between contractors. In September 2014, the final number of Summer 2014 completed interviews from the Continuing sample was provided to NORC. Because the completion rates for the Summer 2014 round were lower than anticipated, CMS and NORC agreed that the Incoming Panel Sample size should be increased to 8,880 cases. Then in December 2014, CMS and NORC agreed to extend the Fall 2014 round to March 2015 so that final re-programming of all questionnaire sections could be completed for fielding of the next round. This decision resulted in an additional buffer of Incoming Panel Sample released in January 2015 with a data collection period of about eight weeks.

4.4 Case Types

MCBS respondents are classified by their phase of participation (i.e., Incoming or Continuing) and interview participation (i.e., Community or Facility), which is determined by residence status. A description of these case types are discussed below.

4.4.1 Incoming and Continuing Cases

Every fall, a new panel of sampled beneficiaries is added to the total sample to replace the panel of respondents completing a final interview and exiting the MCBS in the prior summer round. Respondents new to the MCBS and introduced in the fall round are referred to as Incoming Panel cases. After the initial interview, they are referred to as Continuing cases.

4.4.2 Community Interviews and Facility Interviews

Approximately 95 percent of the sample are interviewed in person in the respondent or proxy's own residence or in a neutral interview location, such as a library or public venue. These interviews are called Community interviews. However, over the course of a four year period, it is not uncommon for respondents to enter long-term care facilities (e.g., nursing homes) or to go back and forth between the community and a facility setting (these cases are called Crossovers). In order to obtain an accurate representation of the experiences of all Medicare beneficiaries, the MCBS includes beneficiaries wherever they reside, even if they reside in and/or enter a facility for the duration of their four years with the study. For these Facility interviews, the respondent does not complete an interview; instead, a specially trained interviewer conducts the Facility interview with appropriate Facility staff personnel. That is, the MCBS does not conduct Facility interviews with the respondent directly; Facility interviews are only conducted with Facility administrative staff.

4.5 Interviewing and Training Procedures

4.5.1 Overview of Data Collection

CMS contracts with NORC at the University of Chicago (NORC) to conduct the MCBS. A national team of specially trained and certified NORC field interviewers conduct either face-to-face interviews with MCBS respondents or their designated proxies or they conduct face-to-face interviews with Facility administrators on behalf of respondents. The first interview conducted for an Incoming Panel respondent is relatively short as it does not collect health care utilization or cost data. Continuing respondent interviews are longer as field interviewers collect information about the respondent's health care utilization and associated costs. Telephone interviews are usually conducted for respondents who are in the 12th and final round of the MCBS as this interview is short and does not include questions on cost and utilization.¹¹

Overview of recruitment of beneficiaries and scheduling procedures

Medicare beneficiaries selected to participate in the MCBS receive a letter and brochure in the mail, introducing the study and explaining that an interviewer from NORC will contact them to schedule an appointment. For Incoming Panel respondents, initial contact is typically made in person; for Continuing respondents, outreach to set an appointment for the next interview is most often made by phone. If respondents are unable to

¹¹ In 2015, interview time was slightly longer for two main reasons. First, the combined Winter/Summer 2015 round led to longer reference periods to recall and collect health care cost and utilization data. Second, the introduction of the PPIC to the Fall 2015 round coupled with the shift to collect the IAQ in Fall 2015 led to longer than usual interviews.

answer questions or require language assistance, respondents can enlist the help of an assistant, such as a family member, to help complete the interview; a proxy can also respond on behalf of the respondent if the respondent is incapacitated or unable to complete the interview. For Spanish speaking respondents, a Spanish version of the Community instrument is available and bilingual interviewers conduct the interview.

Computer-Assisted Personal Interviewing (CAPI)

Field interviewers complete MCBS interviews using a Computer-Assisted Personal Interviewing (CAPI) instrument loaded on a laptop computer. The CAPI program automatically guides the field interviewer through the questions, records the answers, and contains logic and skip flows that increase the output of timely, clear, and high quality data. The CAPI also contains follow-up questions where data were missing from the previous interview. When the interview is completed, the CAPI system allows the field interviewer to transmit the data electronically to the NORC central office.

4.5.2: Interviewer Training

Nationally, the MCBS employs an average of approximately 200¹² field interviewers, who participate in a combination of several targeted training initiatives and careful coaching and monitoring activities throughout data collection. Each training is customized to the level of experience of the interviewer (new to MCBS or MCBS-experienced), the type of interview (Community or Facility), the type of sample (Incoming Panel or Continuing), and the unique requirements of each round (changing questionnaire sections or data collection protocols). Field interviewers who are new to MCBS are always trained in person; experienced field interviewers participate in a periodic in-person training program and receive continuous online refresher training. Weekly field memos issued to all field managers and field interviewers cover important data collection tips, provide answers to interviewer questions, and reminders about how to handle complicated scenarios.

4.5.3: Privacy and Data Security

Field interviewer training stresses the importance of maintaining respondent privacy and project protocols are documented within the Field Interviewer manual. Field outreach and contacting procedures also maintain and ensure confidentiality. These procedures include the utilization of standard computer security protocol (dual authentication password protection for each interviewer laptop) and restrictions on submitting personally identifiable information (PII) through electronic mail. All MCBS survey staff directly involved in data collection and/or analysis activities are required to sign a Non-Disclosure Agreement and a confidentiality agreement.

NORC and CMS are committed to protecting respondent confidentiality and privacy, and both organizations diligently uphold provisions established under the Privacy Act of 1974, the NORC Institutional Review Board (IRB), the Office of Management and Budget (OMB), and the Federal Information Security Management Act of 2002. As stated in the MCBS OMB documentation, the information collected for MCBS is protected by NORC and by CMS. Respondent data is used only for research and statistical purposes. Identifiable information is not disclosed or released except those involved in research without the consent of the individual or the establishment except as required under the Privacy Act of 1974 (Public Law 93-579).

¹² The fall round starts with a target of 230 field interviewers which, over the course of the year, is reduced due to staff turnover. Each summer, a cohort of new interviewers is hired for the MCBS.

4.6 Completed Interviews

Exhibit 4.6.1 provides the count of completed interviews by component for 2015.

Exhibit 4.6.1: 2015 Completed Interviews

Round	Component	Completed Interviews
Winter/Summer 2015	Community	12,172
	Facility	807
	Both	29
	Total	13,008
Fall 2015	Community	12,437
	Facility	1,001
	Both	22
	Total	13,460

SOURCE: 2015 MCBS Internal Sample Control File

Exhibit 4.6.2 lists the number of completed interviews for the Fall 2015 Continuing (2012, 2013, and 2014) and Incoming (2015) Panels by age strata. Under the rotating panel design, the beneficiaries selected in Fall 2011 exited the study prior to Fall 2015.

Exhibit 4.6.2: 2015 MCBS Fall Completed Interviews: Continuing and Incoming Panels

Age Category as of 12/31/2015	2012 Panel	2013 Panel	2014 Panel	2015 Panel	Total
Under 45 years	166	200	295	421	1,082
45-64 years	209	238	337	317	1,101
65-69 years	200	341	701	608	1,850
70-74 years	496	480	710	661	2,347
75-79 years	368	397	661	783	2,209
80-84 years	370	421	729	751	2,271
85+ years	417	478	894	811	2,600
Total	2,226	2,555	4,327	4,352	13,460

SOURCE: 2015 MCBS Internal Sample Control File

5. QUESTIONNAIRES

5.1 Overview

The MCBS Questionnaire structure features two components (Community and Facility), administered based on the beneficiary's residence status. Within each component, the flow and content of the questionnaire varies by interview type and data collection season (fall, winter, or summer). There are two types of interviews (Baseline, Continuing) containing two types of questionnaire sections (Core and Topical). The beneficiary's residence status determines which questionnaire component is used and how it is administered. See Exhibit 5.1 for a depiction of the MCBS Questionnaire structure.

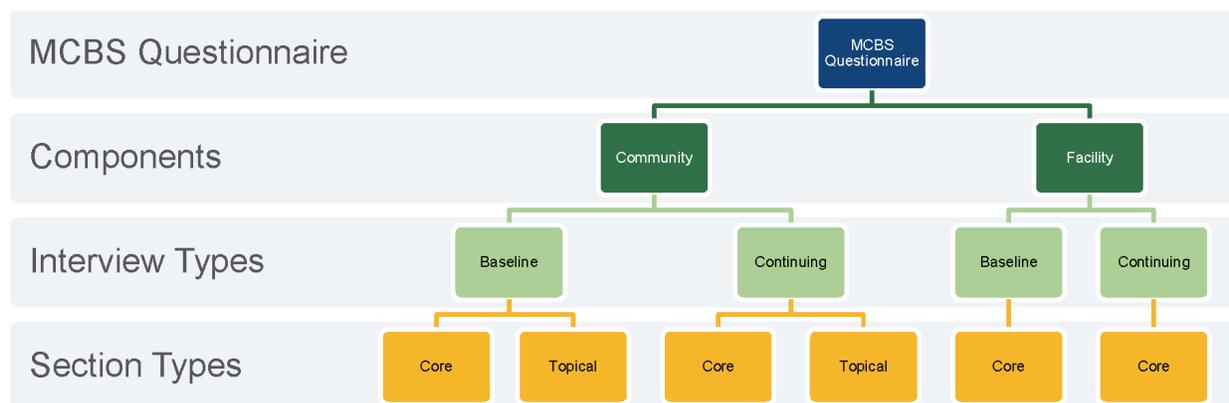
- **Community Component:** Survey of beneficiaries residing in the community at the time of the interview (i.e., their residence or a household). Interview may be conducted with the beneficiary or a proxy.
- **Facility Component:** Survey of beneficiaries residing in facilities such as long-term care nursing homes or other institutions at the time of the interview. Interviewers do not conduct the Facility component with the beneficiary, but with staff members located at the facility (i.e., facility respondents). This is a key difference between the Community and Facility components.

Within each component, there are two types of interviews – an initial (Baseline) interview administered to new beneficiaries, and an interview administered to repeat (Continuing) beneficiaries as they progress through the study.

- **Baseline:** The initial questionnaire administered to beneficiaries new to the study; administered in the fall of the year they are selected into the sample (interview #1).
- **Continuing:** The questionnaire administered to beneficiaries as they progress through the study (interviews #2-12).

Depending on the interview type and data collection season (fall, winter, or summer), the MCBS Questionnaire includes Core and Topical sections. See Sections 5.2 and 5.3 for tables of the 2015 Core and Topical sections.

- **Core:** These sections are of critical purpose and policy relevancy to the MCBS, regardless of season of administration. Core sections collect information on beneficiaries' health insurance coverage, health care utilization and costs, and operational management data such as locating information.
- **Topical:** These sections collect information on special interest topics. They may be fielded every round or on a seasonal basis. Specific topics may include housing characteristics, drug coverage, and knowledge about Medicare.

Exhibit 5.1: MCBS Questionnaire Overview

5.2 Community Questionnaire

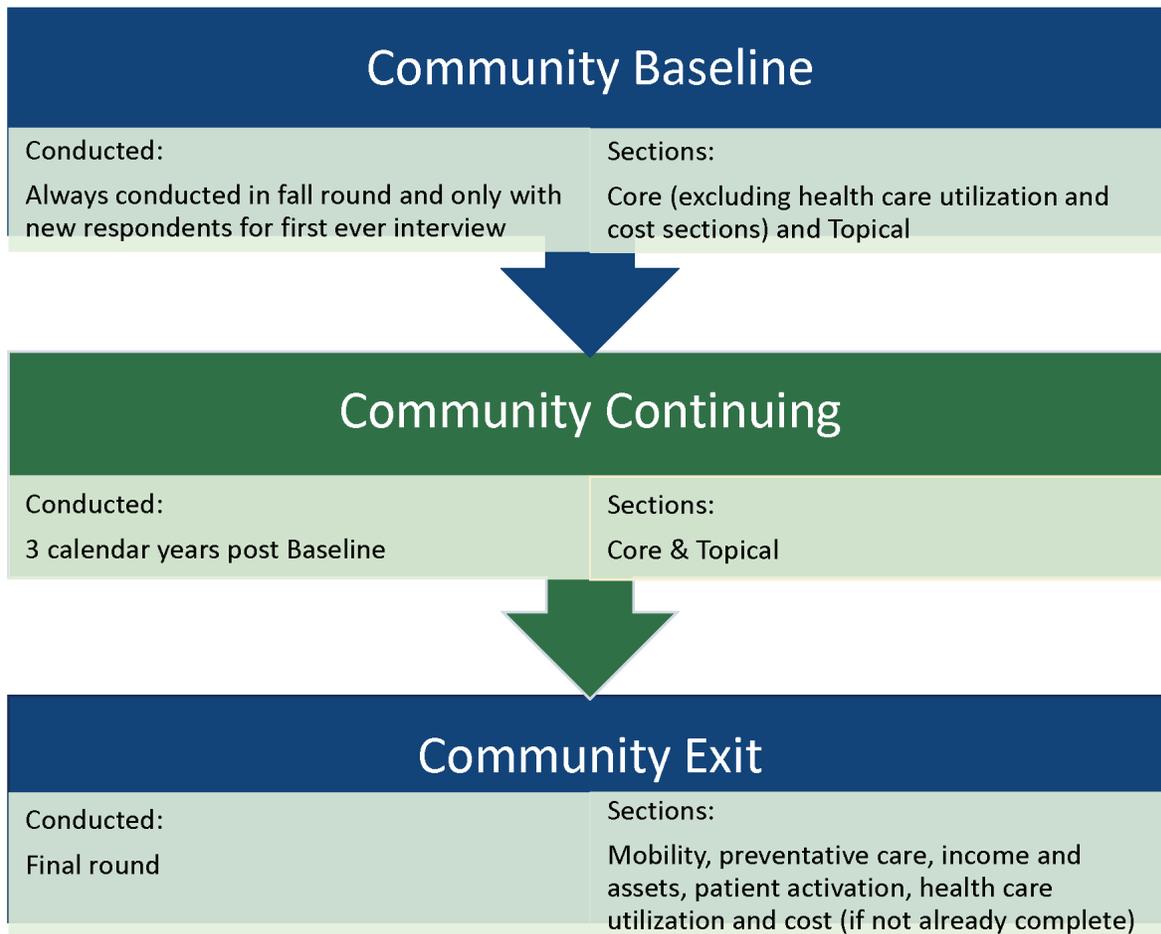
The content of the MCBS Community questionnaire consists of Core and Topical sections. Core sections include the standard opening and closing sections covering interview characteristics and socio-demographics, health insurance sections, utilization sections, cost sections, experiences with care sections, and health status sections. The questionnaire sections in each of these categories may be asked each round or seasonally. Topical sections in the Community questionnaire include information about housing characteristics, health behaviors, and knowledge and decision-making.

Different combinations of Core and Topical sections are used depending on a number of criteria, including interview type (Baseline vs. Continuing); the season of the round of data collection (fall, winter, summer); whether the respondent is alive, deceased, or in a facility; and whether the interview is being completed with the beneficiary or a proxy.

The first Community interview conducted with Incoming Panel respondents is referred to as the Baseline interview. This interview is always conducted in the fall round and consists of a combination of Core and Topical sections. However, this first interview does not include Core sections that collect health care utilization and cost data. The respondent's 2nd through 11th interviews, also known as the Continuing interviews, consist of Core and Topical sections including those that collect health care utilization and cost data; these interviews essentially provide three calendar years of reported health care utilization and cost data for each beneficiary through the careful programming of reference periods throughout the questionnaire sections. Finally, there is a short 'exit' interview that is conducted in the final summer round; this 12th interview completes the beneficiary's participation in the MCBS; it generally consists of mobility of beneficiaries, preventative care, income and assets, and patient activation sections (and for those who did not have an 11th interview, it completes any utilization data that was still open as of the previous calendar year).

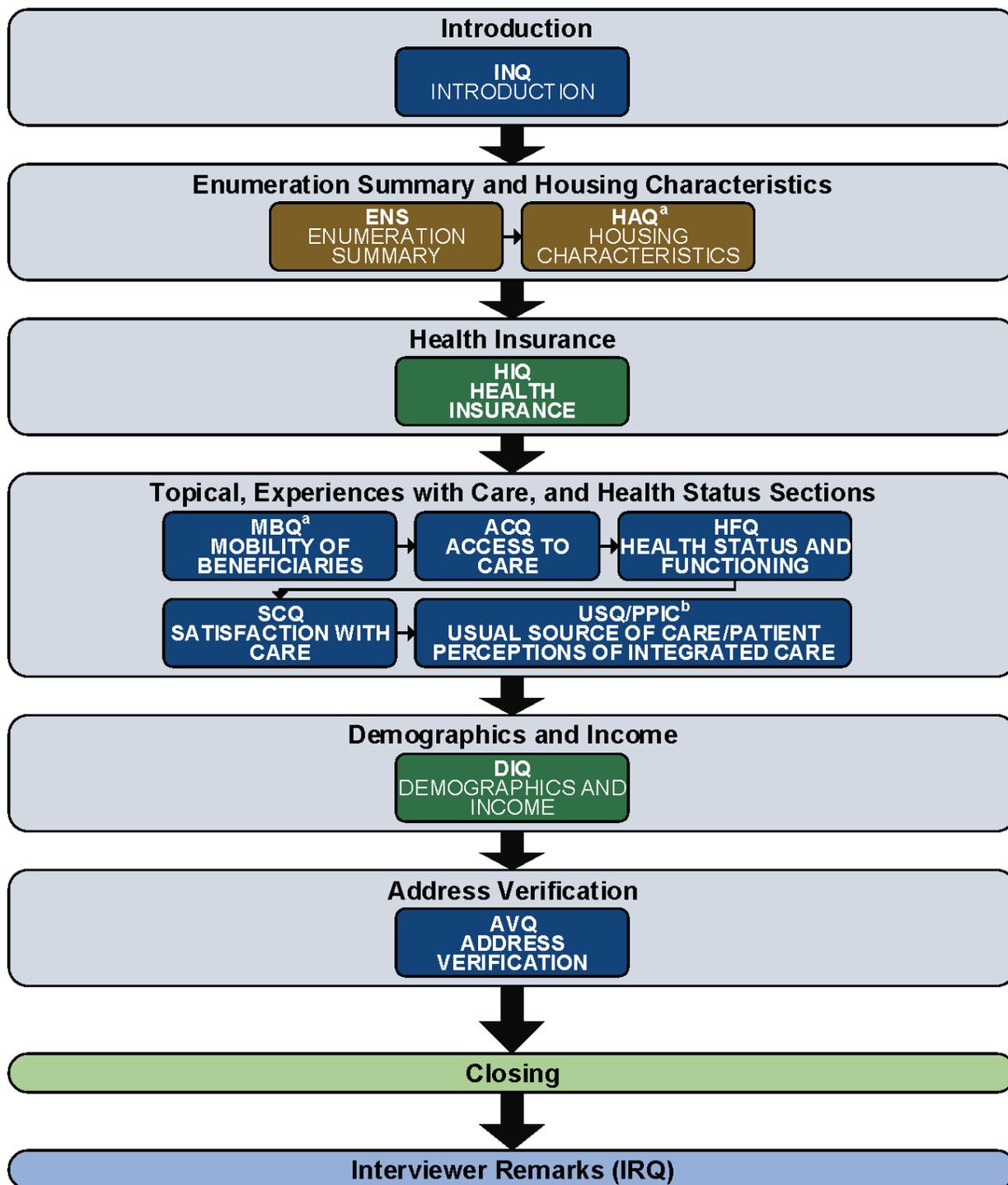
In summary, the Community questionnaire consists of the following components (see Exhibit 5.2):

- Community Baseline questionnaire
- Community Continuing questionnaire (exit interview conducted in final round)

Exhibit 5.2: Overview of the MCBS Community Questionnaire Components*5.2.1 Baseline Interview*

As the first interview conducted, the Baseline interview provides an opportunity for the field interviewer to develop a strong rapport and connection with the respondent, acquaint the respondent with the intent of the survey, and emphasize the importance of keeping accurate records of medical care and expenses. Whenever possible, field interviewers are assigned the same beneficiary over the course of their participation in the survey so establishing a positive relationship is critical during this first interview. Exhibit 5.2.1 depicts the sections and flow of the Community Baseline interview.

Exhibit 5.2.1: 2015 MCBS Community Questionnaire Flow for Baseline Interview



a = Topical Section

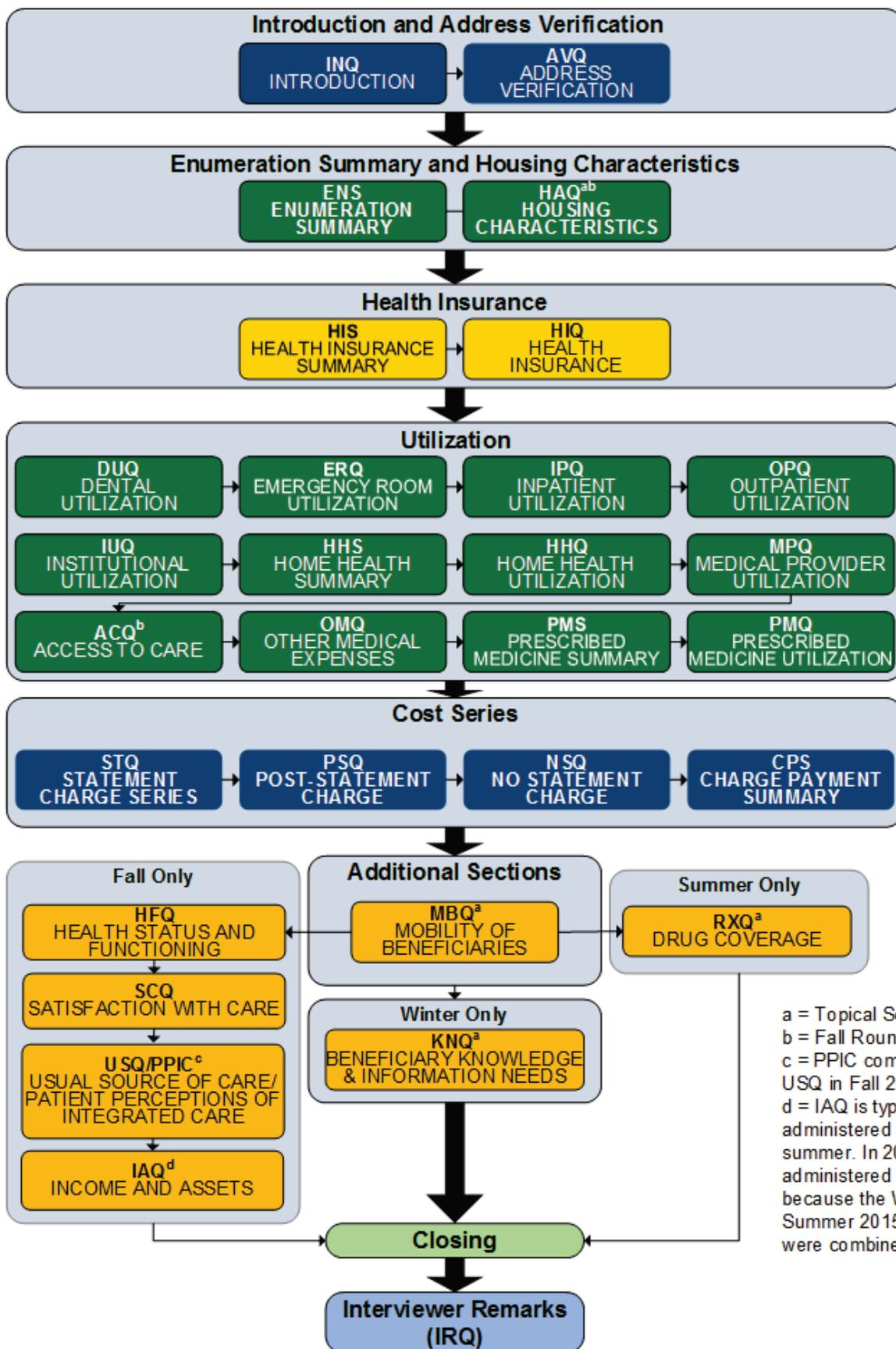
b = PPIC combined with USQ in Fall 2015 only

5.2.2 Continuing Interview

The Continuing interview consists of Core sections that focus on use of medical services and the resulting costs, and are asked in essentially the same way each and every time a section is administered. The respondent is asked about new health events, and to complete any partial information that was collected in the last interview. For example, the respondent may mention a doctor visit during the health care "utilization" part of the interview. In the "cost" section, the field interviewer will ask if there are any receipts or statements from the visit. If the answer is "yes", the field interviewer will record information about costs from the statements, but if the answer is "no," the question will be stored until the next interview. The Continuing interview also includes sections about health insurance. During each interview, the respondent is asked to verify ongoing health insurance coverage and to report any new health insurance plans.

Continuing interviews also include Topical sections that cover subjects such as mobility or drug coverage. Exhibit 5.2.2 depicts the sections and flow of the Continuing Community interview. All sections are considered "Core" sections unless otherwise noted.

Exhibit 5.2.2: 2015 MCBS Community Questionnaire Flow for Continuing Interview



a = Topical Section
 b = Fall Round Only
 c = PPIC combined with USQ in Fall 2015 only.
 d = IAQ is typically administered in the summer. In 2015, it was administered in the fall because the Winter and Summer 2015 rounds were combined.

5.2.3 Core Questionnaire Sections

New respondents receiving the Baseline interview do not receive Core sections about health care utilization and costs; these sections are reserved for Continuing respondents. As such, in Fall 2015, only persons in the 2012, 2013, and 2014 panels received the Core sections about health care utilization and health care costs. All panels received the health insurance section. Exhibit 5.2.3 displays the Core Community questionnaire sections that are included in the Survey File and the Cost Supplement File.

Exhibit 5.2.3: 2015 MCBS Community Core Sections by Data File and Administration Schedule*

Section Group	Abbr.	Section Name	Survey File	Cost Supplement File	Administrative Season
Socio-Demographics	IAQ	Income and Assets**	X		Summer
	DIQ	Demographics/Income	X		Fall, Baseline Interview
Health Insurance	HIS	Health Insurance Summary***	X		All Seasons
	HIQ	Health Insurance	X		All Seasons
Utilization	DUQ	Dental Utilization		X	All Seasons
	ERQ	Emergency Room Utilization		X	All Seasons
	IPQ	Inpatient Hospital Utilization		X	All Seasons
	OPQ	Outpatient Hospital Utilization		X	All Seasons
	IUQ	Institutional Utilization		X	All Seasons
	HHS	Home Health Summary***		X	All Seasons
	HHQ	Home Health Utilization		X	All Seasons
	MPQ	Medical Provider Utilization		X	All Seasons
	OMQ	Other Medical Expenses Utilization		X	All Seasons
	PMS	Prescribed Medicine Summary***		X	All Seasons
	PMQ	Prescribed Medicine Utilization		X	All Seasons
Cost	STQ	Statement Cost Series		X	All Seasons
	PSQ	Post-Statement Charge		X	All Seasons
	NSQ	No Statement Charge		X	All Seasons
	CPS	Charge Payment Summary***		X	All Seasons
Experiences with Care	ACQ	Access to Care	X		Fall
	SCQ	Satisfaction with Care	X		Fall
	USQ/PPIC	Usual Source of Care/Patient Perceptions of Integrated Care	X		Fall
Health Status	HFQ	Health Status and Functioning	X		Fall

SOURCE: 2015 MCBS Community Questionnaire

*Certain procedural or operational management sections are collected specifically to manage the data collection process. These sections are not directly included in the LDS files (e.g., Introduction (INQ), Address Verification (AVQ), Enumeration (ENS), Closing (CLQ), and Interview Remarks (IRQ)).

**In 2015 only, due to the combined Winter/Summer Rounds, the IAQ was fielded in the fall to Continuing respondents only. IAQ is normally fielded in summer rounds. The IAQ collects income and asset information about the previous calendar year. The 2015 IAQ collected income and asset information for the 2014 calendar year.

***Summary sections: Updates and corrections are collected through the summary sections. The respondent is asked to verify summary information gathered in previous interviews. Changes are recorded if the respondent reports information that differs from what was previously recorded.

5.2.4 Topical Questionnaire Sections

Some Topical sections were administered on a modified schedule in 2015 (see Exhibit 5.2.4, Administrative Season, for the modified season of data collection). Note that information collected via Topical questionnaire sections are included in the Survey File only and are not included in the Cost Supplement File.

Exhibit 5.2.4: 2015 MCBS Community Topical Sections by Administration Schedule

Section Group	Abbr.	Section Name	Traditional Season	Administrative Season
Housing Characteristics	HAQ	Housing Characteristics	Fall only	Fall 2015
Health Behaviors	MBQ	Mobility of Beneficiaries	All seasons	Winter/Summer 2015, Fall 2015
	PVQ	Preventive Care	All seasons	Winter 2016
Knowledge and Decision Making	KNQ	Beneficiary Knowledge and Information Needs	Winter only	Winter/Summer 2015
	PAQ	Patient Activation	Summer only	Summer 2016
	RXQ	Drug Coverage	Summer only	Winter/Summer 2015

5.2.5 Community Questionnaire Section Rotation within a Data Year

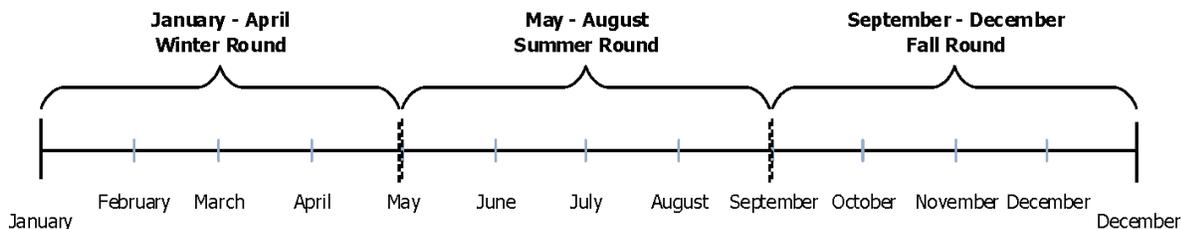
In 2015, the traditional model of conducting the MCBS in three rounds was modified to allow for additional time to complete the re-programming of all questionnaire sections. Exhibit 5.2.5 presents the MCBS Questionnaire section rotation schedule for a typical data collection year compared to that of 2015. Thus, the 2015 MCBS data releases reflect data collected from March 2015 through the first week in January.

Because Winter/Summer 2015 rounds were combined, some topical sections typically asked in winter or summer were included, but others were delayed until Fall 2015. Specifically, the Beneficiary Knowledge and Information Needs section (KNQ), usually asked in the winter, and the Drug Coverage section (RXQ), usually asked in the summer, were included in Winter/Summer 2015; Income and Assets (IAQ), usually asked in the summer, was shifted to Fall 2015; and Patient Activation (PAQ), usually asked in the summer, was dropped in 2015 due to similar content in the Usual Source of Care/Patient Perceptions of Integrated Care (USQ/PPIC)¹³ measures asked in Fall 2015.

¹³ In 2015, CMS introduced the PPIC section for the first time as a combined module with the current USQ section. The PPIC obtains specific information about the usual source of health care for the beneficiary (i.e., the particular clinic, health center, doctor's office, or other place where the beneficiary usually goes when sick or in need of medical advice). This section also asks about issues relating to the integration of care that patients receive across providers.

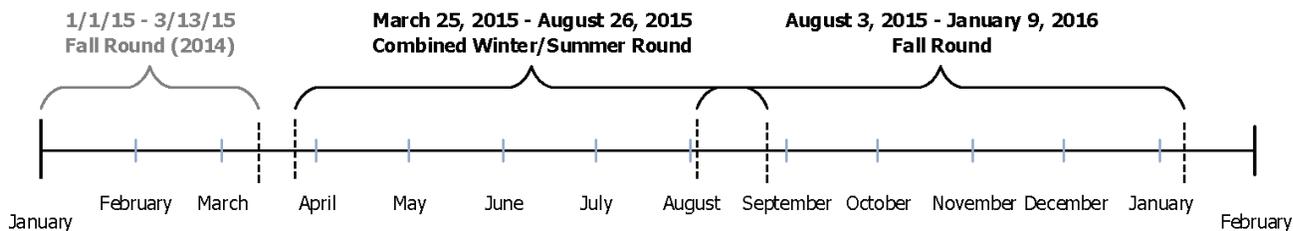
Exhibit 5.2.5: 2015 MCBS Community Questionnaire Section Rotation

Typical MCBS Questionnaire Rotation Schedule



Health Insurance		
Utilization		
Cost		
Interview Characteristics & Socio-demographics (INQ, AVQ, ENS, CLQ, IRQ)		
KNQ	IAQ	Health Status (HFQ)
	EXQ	Experiences with Care (ACQ, SCQ, USQ/PPIC)
	RXQ	DIQ
	PAQ	HAQ

2015 MCBS Questionnaire Rotation Schedule



Health Insurance	
Utilization	
Cost	
Interview Characteristics & Socio-demographics (INQ, AVQ, ENS, CLQ, IRQ)	
KNQ	Health Status (HFQ)
EXQ	Experiences with Care (ACQ, SCQ, USQ/PPIC)
RXQ	DIQ
PAQ	HAQ
	IAQ

5.3 Facility Instrument

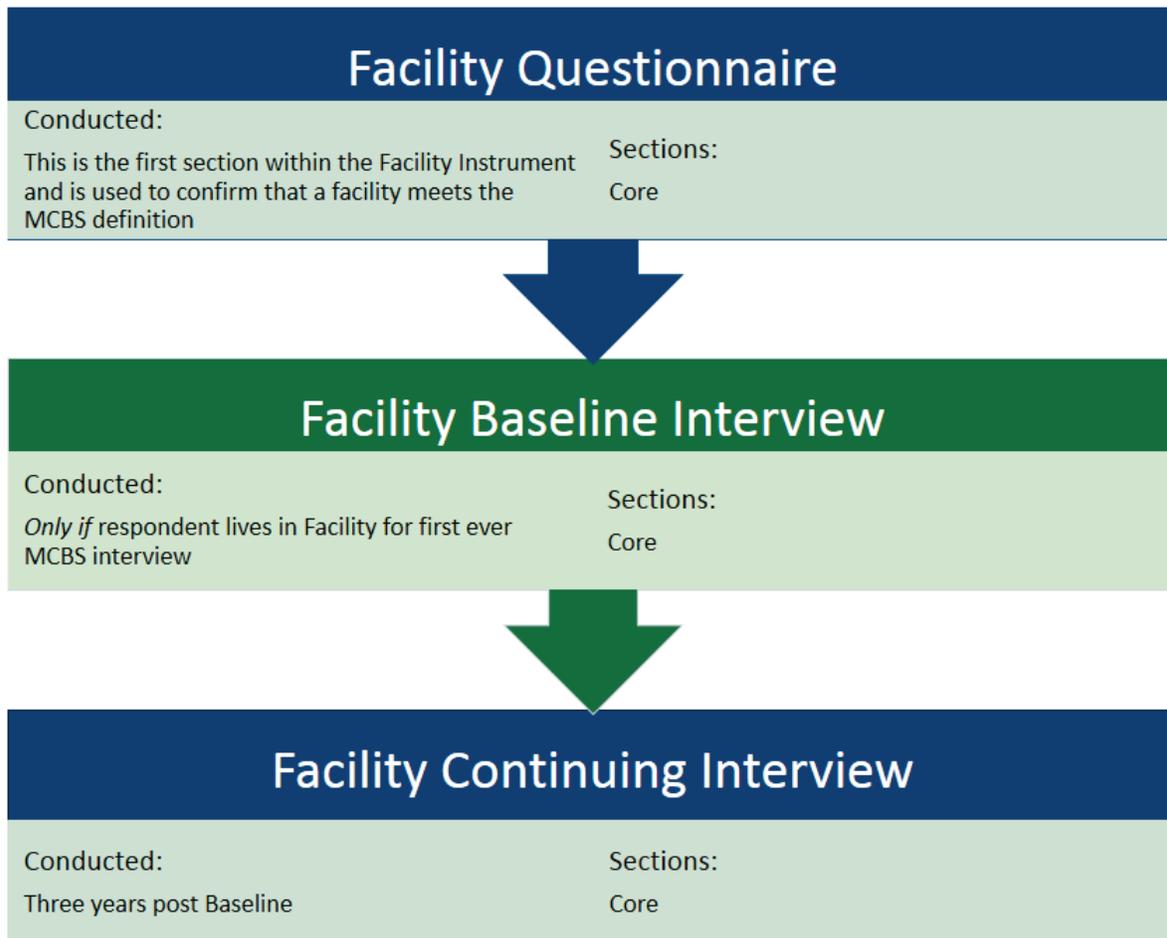
In addition to collecting information from respondents living in the community, the MCBS collects information at the institutional level if the beneficiary is residing in a facility at the time of the interview. Information is obtained only by interviewing facility staff; the beneficiary is never interviewed directly.

Similar to the Community questionnaire, if a beneficiary is living in a facility when first selected to participate in the MCBS, a Facility Baseline interview is conducted. For cases in the 2nd through 11th round, a Facility Continuing interview is conducted. While administration of the Facility instrument sections varies by season and interview type, the Facility instrument is comprised exclusively of Core sections; each section collects information that is considered of critical importance to the MCBS.

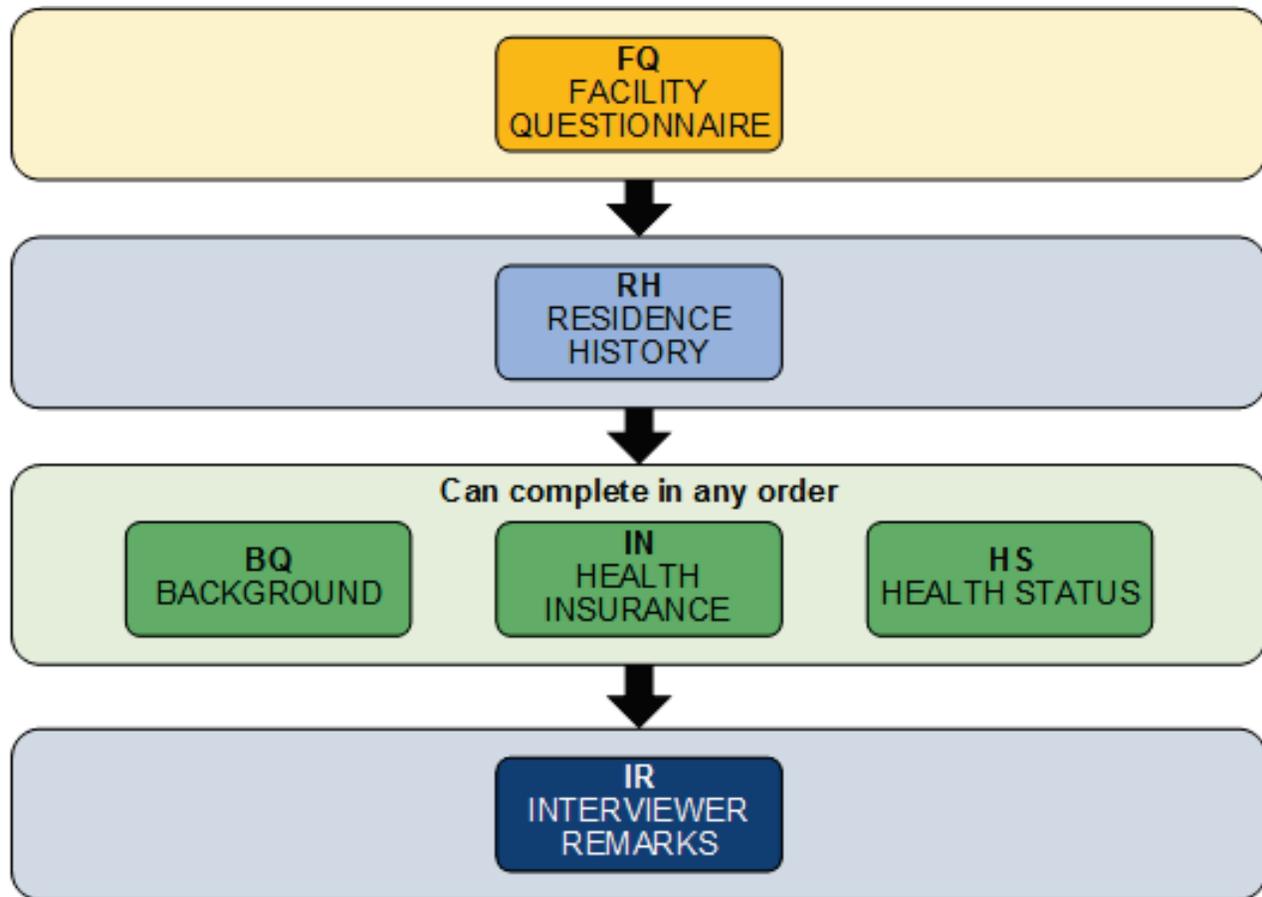
If an institutionalized person returns to the community, a Community questionnaire is conducted. If the beneficiary spent part of the reference period in the community and part in a facility, then a separate interview is conducted to collect information pertaining to the beneficiary's experiences covering each distinct period of time. In this way, a beneficiary is followed in and out of facilities and a continuous record is maintained regardless of the location of the beneficiary.

In summary, the Facility instrument consists of the following components (see Exhibit 5.3):

- Facility Questionnaire (establishes that the facility meets the MCBS Facility interview requirements)
- Facility Baseline interview
- Facility Continuing interview

Exhibit 5.3: Overview of the MCBS Facility Instrument**5.3.1 Facility Baseline Interview**

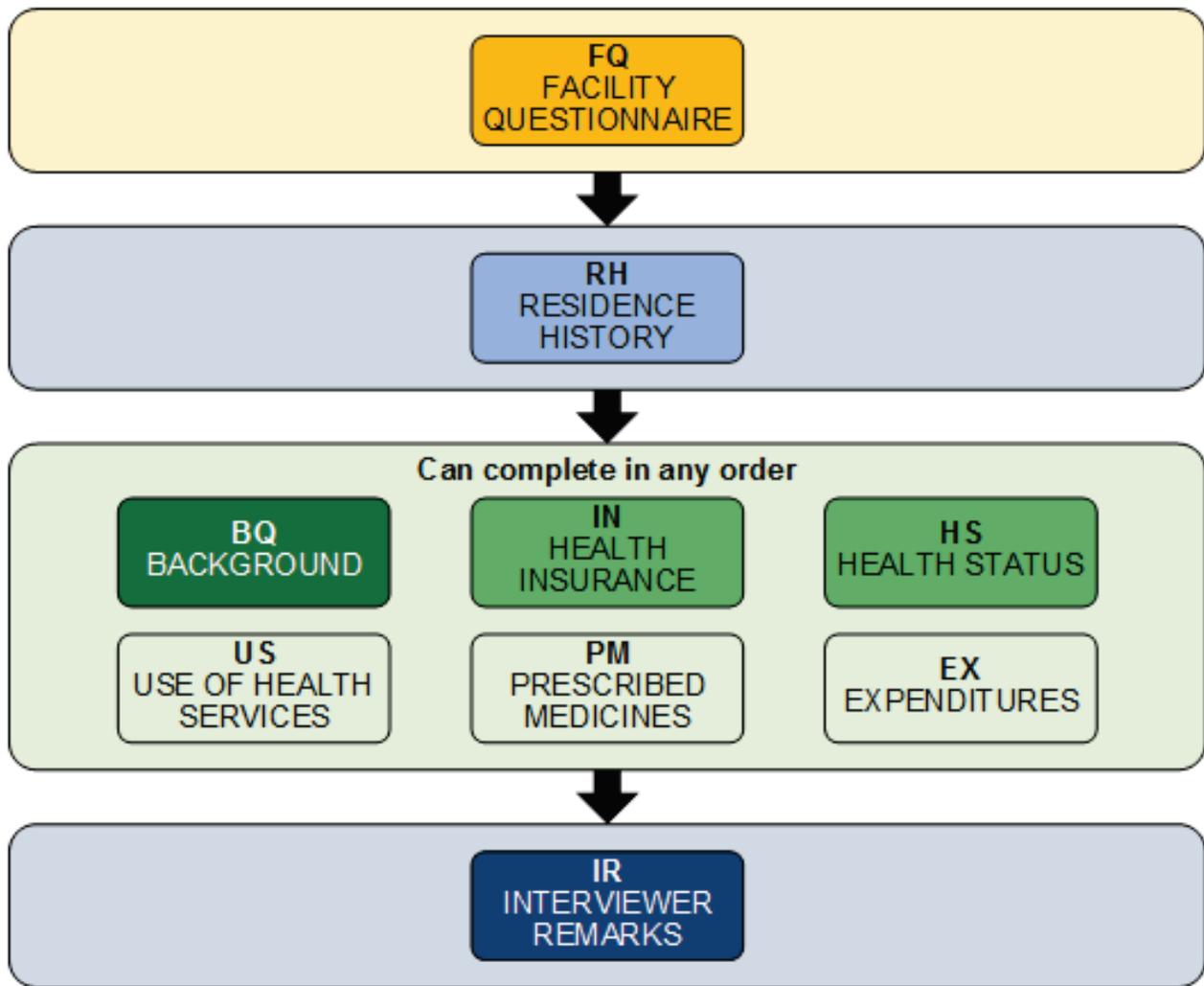
The Facility Baseline interview (see Exhibit 5.3.1) serves as a reference interview and gathers information on the facility itself as well as the health status, insurance coverage, residence history and demographic information for the beneficiary.

Exhibit 5.3.1: 2015 MCBS Facility Instrument Flow for Baseline Interview

5.3.2 Facility Continuing Interview

Exhibit 5.3.2 illustrates the flow of the Facility Continuing interview sections. Note that beneficiaries who move to a facility from the community (Community to Facility cases), move to a new facility (Facility to Facility cases), or move to the community from the facility (Facility to Community cases) receive a different combination of Facility Continuing sections than beneficiaries who have lived continuously in the same facility.

Exhibit 5.3.2: 2015 MCBS Facility Instrument Flow for Continuing Interviews



- Administered only for Community to Facility interviews
- Administered to all sample types in Fall round. Otherwise, administered only for Community to Facility, Facility to Facility, and for beneficiaries residing in a Facility whose last interview was a Community interview and who completed a Facility interview in a prior round.
- Administered for all Facility interviews

5.3.3 Facility Continuing Core Sections

The sections depicted in Exhibit 5.3.3 parallel the Core sections for the Community component. These sections of the Facility Continuing interview are administered in the same rotation as the Community Continuing interview (the 2nd through the 11th rounds), however beneficiaries new to a facility receive additional Core sections.

Similarly to the Community questionnaire, operational management/procedural data is collected through the Interviewer Remarks (IR) section, which is completed by the interviewer and primarily used for case finalization. Exhibit 5.3.3 summarizes each component of the Facility questionnaire by data release.

Exhibit 5.3.3: 2015 MCBS Facility Core Sections by Data File and Administration Schedule*

Section Group	Abbrev	Section Name	Survey File	Cost Supplement File	Administrative Season
Facility Characteristics	FQ	Facility Questionnaire	X		All seasons
Socio-Demographics	RH	Residence History	X		All seasons
	BQ	Background	X		Fall**
Health Insurance	IN	Health Insurance	X		Fall***
Utilization	US	Use of Health Services		X	All seasons
	PM	Prescribed Medicines		X	All seasons
Cost	EX	Expenditures		X	All seasons
Health Status	HS	Health Status	X		Fall***

SOURCE: 2015 MCBS Facility Instrument

*Certain procedural or operational management sections are collected specifically to manage the data collection process. These sections are not directly included in the LDS files (e.g., Interview Remarks (IR)).

**The BQ section is also administered to Community to Facility cases each season.

***The IN and HS sections are also administered to Community to Facility and Facility to Facility cases each season.

6. SAMPLING

6.1 Medicare Population Covered by the 2015 MCBS Data

The MCBS data releases are a reflection of enrolled Medicare beneficiaries residing in the continental U.S. and Puerto Rico. Excluded from both populations are residents of foreign countries and U.S. possessions and territories other than Puerto Rico.¹⁴ The MCBS data releases include two overlapping but differing populations:

- The ever enrolled population represents individuals who were enrolled in Medicare at any time during the calendar year. This population includes beneficiaries who enrolled during the calendar year 2015 as well as those who dis-enrolled or died prior to their fall interview. The ever enrolled population includes beneficiaries who were enrolled in Medicare for at least one day at any point during 2015.
- The continuously enrolled population represents only those individuals continuously enrolled in Medicare from January 1, 2015 up to and including their fall interview; this specifically, excludes beneficiaries who enrolled during the calendar year 2015 and those who dis-enrolled or died prior to their fall interview. The concept of continuously enrolled is consistent with the concept of being exposed or “at risk” for using services up to and including their fall interview.

Exhibits 6.1.1 and 6.1.2 present estimates of the size of the continuously enrolled and ever enrolled Medicare populations by race, and age (as of December 31, 2015) for male and female beneficiaries. Exhibit 6.1.3 presents the aggregated estimates of the size of the two Medicare populations overall and by sex and race.

¹⁴ Note that data collection for beneficiaries who enrolled during 2014 or 2015 and died in 2014 or 2015 after enrollment but before their fall interview was still pursued through attempts at conducting proxy interviews.

Exhibit 6.1.1: 2015 Estimated Male Medicare Beneficiaries by Race and Age

Race	Age as of 12/31/2015	Continuously Enrolled	Ever Enrolled
White non-Hispanic	0-44	555,942	670,238
	45-64	2,193,126	2,335,854
	65-69	4,325,275	5,295,065
	70-74	3,955,461	4,065,068
	75-79	2,786,549	2,922,409
	80-84	2,020,706	2,123,184
	85+	1,737,756	2,072,454
Black non-Hispanic	0-44	178,083	205,711
	45-64	577,796	578,035
	65-69	578,527	690,114
	70-74	430,622	428,442
	75-79	245,246	267,772
	80-84	152,684	189,186
	85+	100,030	126,149
Hispanic	0-44	110,483	137,726
	45-64	409,806	425,726
	65-69	457,711	590,586
	70-74	472,973	469,559
	75-79	262,777	281,137
	80-84	178,542	181,739
	85+	110,632	154,617
Other*	0-44	59,137	67,340
	45-64	166,026	157,219
	65-69	457,179	612,849
	70-74	280,691	295,601
	75-79	116,301	114,808
	80-84	80,419	80,675
	85+	78,526	96,801

SOURCE: 2015 Survey File and Sample Control File, weighted counts.

*The 'Other' race category includes other races, more than one race, and unknown race.

Exhibit 6.1.2: 2015 Estimated Female Medicare Beneficiaries by Race and Age

Race	Age as of 12/31/2015	Continuously Enrolled	Ever Enrolled
White non-Hispanic	0-44	443,610	522,125
	45-64	2,397,998	2,561,616
	65-69	5,262,821	6,361,380
	70-74	4,686,665	4,888,892
	75-79	3,546,673	3,721,810
	80-84	2,562,499	2,732,793
	85+	3,137,327	3,631,534
Black non-Hispanic	0-44	138,463	165,387
	45-64	637,401	699,218
	65-69	785,465	928,526
	70-74	546,501	549,263
	75-79	421,364	433,798
	80-84	285,751	297,590
	85+	309,106	360,265
Hispanic	0-44	83,461	87,085
	45-64	350,986	375,228
	65-69	594,324	733,255
	70-74	529,513	542,724
	75-79	325,445	342,623
	80-84	243,789	245,023
	85+	276,951	309,035
Other*	0-44	43,550	67,205
	45-64	75,327	69,500
	65-69	390,847	417,647
	70-74	260,361	243,782
	75-79	125,398	125,492
	80-84	97,437	104,405
	85+	111,103	122,716

SOURCE: 2015 Survey File and Sample Control File, weighted counts.

*The 'Other' race category includes other races, more than one race, and unknown race.

Exhibit 6.1.3: 2015 Total Estimated Medicare Beneficiaries by Sex and Race

Group	Subgroup	Continuously Enrolled	Ever Enrolled
Overall Total		51,749,140	57,275,980
Sex	Male Total	23,079,006	25,636,063
	Female Total	28,670,134	31,639,917
Race	White non-Hispanic Total	39,612,406	43,904,421
	Black non-Hispanic Total	5,387,038	5,919,456
	Hispanic Total	4,407,393	4,876,063
	Other Total*	2,342,302	2,576,040

SOURCE: 2015 Survey File and Sample Control File, weighted counts.

*The 'Other' race category includes other races, more than one race, and unknown race.

6.2 Targeted Population and Sampling Strata

Historically, the targeted population for the MCBS consisted of persons enrolled in one or both parts of the Medicare program, that is, Part A or Part B, as of January 1 of the applicable sample-selection year, and whose address on the Medicare files is in one of the 48 contiguous states (excludes Alaska and Hawaii), the District of Columbia, or Puerto Rico. Beginning in 2015, the targeted population for the MCBS consisted of Part A and/or Part B enrollees as of December 31 of the sample-selection year. For example, for Fall Rounds 2012, 2013, and 2014 (the three rounds in which the 2012-2014 Panels included in the 2015 MCBS data were first selected), the targeted populations for the new panels included those individuals enrolled as of January 1 of 2012, 2013, and 2014 respectively. For Fall 2015 (the round in which the 2015 Panel was selected), the targeted population for the 2015 Panel included those individuals enrolled as of December 31, 2015.

The universe of beneficiaries for the MCBS is divided into seven sampling strata based on age as of a specified date during the calendar year of the data release. Beginning in 2015, this date was moved from July 1 to December 31 of the sampling year in order to include all beneficiaries enrolling during the sampling year. The age categories are: under 45, 45 to 64, 65 to 69, 70 to 74, 75 to 79, 80 to 84, and 85 or older. Beginning in 2015, the strata were expanded to separate U.S. Hispanic, U.S. non-Hispanic, and Puerto Rican beneficiaries by age group. The resulting 21 strata in 2015 include those depicted in Exhibit 6.2.1.

Exhibit 6.2.1: 2015 MCBS Sampling Strata

U.S. Hispanic	U.S. Non-Hispanic	Puerto Rican Resident
Under 45 years U.S. Hispanic	Under 45 years U.S. non-Hispanic	Under 45 years Puerto Rican resident
45 - 64 U.S. Hispanic	45 - 64 U.S. non-Hispanic	45 - 64 Puerto Rican resident
65 - 69 U.S. Hispanic	65 - 69 U.S. non-Hispanic	65 - 69 Puerto Rican resident
70 - 74 U.S. Hispanic	70 - 74 U.S. non-Hispanic	70 - 74 Puerto Rican resident
75 - 79 U.S. Hispanic	75 - 79 U.S. non-Hispanic	75 - 79 Puerto Rican resident
80 - 84 U.S. Hispanic	80 - 84 U.S. non-Hispanic	80 - 84 Puerto Rican resident
85 and over U.S. Hispanic	85 and over U.S. non-Hispanic	85 and over Puerto Rican resident

Additionally, in the 2013 and 2014 Panels, beneficiaries in an ACO were oversampled, and in the 2015 panel, beneficiaries residing within the U.S. who were Hispanic (based on a Hispanic ethnicity classification code in

the Medicare enrollment data; see Eicheldinger¹⁵ for more details) were oversampled. Exhibit 6.2.2 displays the beneficiaries selected as part of the 2015 Panel, by age and ethnicity.

Exhibit 6.2.2: 2015 Panel of Selected Beneficiaries by U.S. Hispanic and U.S. Non-Hispanic Ethnicity Classification and Age Category

Age Category as of 12/31/2015	TOTAL Sample Size	TOTAL Weighted	U.S. Hispanic Sample Size	U.S. Hispanic Weighted	U.S. Non-Hispanic Sample Size	U.S. Non-Hispanic Weighted	Puerto Rican Sample Size	Puerto Rican Weighted
Under 45 years	830	1,873,525	68	158,251	752	1,706,647	---	8,627
45-64 years	526	7,496,967	47	564,805	472	6,861,216	17*	70,946
65-69 years	1,235	15,201,754	107	715,960	1112	14,403,351	16	82,443
70-74 years	1,347	11,505,996	112	730,697	1218	10,699,465	17	75,834
75-79 years	1,472	8,279,913	123	588,696	1330	7,637,082	19	54,136
80-84 years	1,503	6,063,941	125	379,031	1359	5,648,772	19	36,137
85+ years	1,708	6,811,297	142	359,745	1544	6,408,628	22	42,923
Total	8,621	57,233,392	724	3,497,185	7787	53,365,161	110	371,046

SOURCE: 2015 MCBS Internal Sample Control File

*For Puerto Rican beneficiaries, the age categories of under 45 years and 45-64 years are combined such that all cell sizes meet non-disclosure standards.

6.3 Primary and Secondary Sampling Units

All of the panels in the 2015 data releases are distributed across the redesigned sample of 107 PSUs selected in 2001.¹⁶ These PSUs are a representative, national sample of beneficiaries who are geographically dispersed throughout metropolitan areas and groups of non-metropolitan counties. Recall that SSUs are census tracts or groups of contiguous tracts.

6.4 Sample Selection

The MCBS sampling design provides nearly self-weighting (i.e., equal probabilities of selection) samples of beneficiaries within each of the 21 sampling strata. Within the selected PSUs and SSUs, a systematic sampling scheme with random starts is employed for selecting beneficiaries.¹⁷ For each continuing beneficiary, the survey questions corresponding to the Survey File data release are administered in the fall of the data collection year. Similarly, for beneficiaries new to the MCBS, the survey questions are administered as part of the initial fall Baseline interview. A brief summary of the number of selected beneficiaries and the inclusion criteria for the 2012 – 2015 Panels is provided in Exhibit 6.4.

¹⁵ Eicheldinger, C. "More Accurate Racial and Ethnic Codes for Medicare Administrative Data," *Health care financing review* 29, no. 3.

¹⁶ An original set of 107 PSUs was selected at the start of the MCBS in 1991; the current PSUs were selected in 2001 with a focus on maximizing overlap with the original set of PSUs. With the rotating panel design, the PSU redesign is transparent to data users and no special processing is required. For more details on the PSU redesign, see Lo, A, A Chu, and R Apodaca. "Redesign of the Medicare Current Beneficiary Survey Sample," Proceedings of the Survey Research Section of the American Statistical Association 2002.

¹⁷ The MCBS 2015 Panel was drawn by systematic random sampling with probability proportional to probabilities of selection with an independently selected random start within each PSU. For more information on this sampling method, please see the MCBS Methodology Report.

Exhibit 6.4: 2015 MCBS Sample Selection for the LDS Releases

Panel	# of Selected Beneficiaries	Previously Enrolled Beneficiaries Still Alive as of January 1 of Panel Year	Newly Enrolled Beneficiaries Since Last Panel Selection*
2012	7,400	Enrolled on or before 1/1/2011	Enrolled 1/2/2011 – 1/1/2012
2013	7,400	Enrolled on or before 1/1/2012	Enrolled 1/2/2012 – 1/1/2013
2014	11,398	Enrolled on or before 1/1/2013	Enrolled 1/2/2013 – 1/1/2014
2015	8,621	Enrolled on or before 1/1/2014	Enrolled 1/2/2014 – 12/31/2015

SOURCE: 2015 MCBS Internal Sample Control File

*Newly enrolled beneficiaries need not be living as of January 1st of the panel year; because these beneficiaries were not eligible for selection in any previous panels and could have incurred medical costs any time after enrollment, they are eligible for selection into the current panel regardless of vital status.

7. DATA PRODUCTS & DOCUMENTATION

7.1 Contents of Data Release

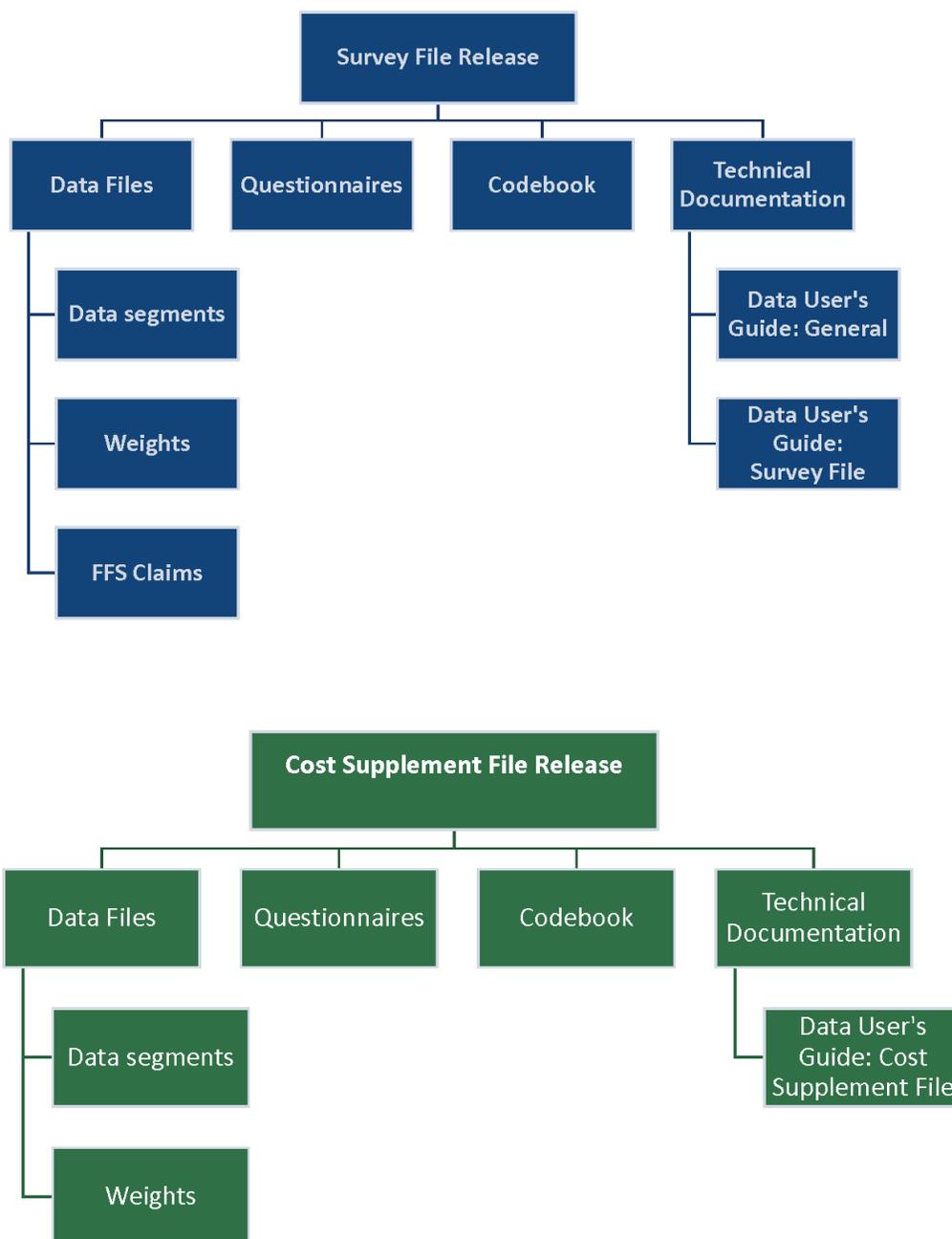
MCBS data are made available via releases of annual files. For 2015, two annual LDS releases (the Survey File and the Cost Supplement File), and one PUF (based on the Survey File data only) are planned. The LDS releases contain multiple files, called segments, which are easily linkable through a common beneficiary key ID. The Survey File LDS contains 4,041 variables across 34 segments and the Cost Supplement LDS contains 835 variables across 12 segments.

Below we present a general overview of the contents of each data release and the associated documentation. Detailed descriptions of each segment, including the core contents of each segment, key variable definitions, and special notes on new variables, recodes, and administrative sources for select variables can be found in the data release-specific documents (see MCBS Data User's Guide: Survey File and MCBS Data User's Guide: Cost Supplement File).

Exhibit 7.1 displays the components of each LDS release. Both the Survey File and Cost Supplement File contain data segments, codebooks, questionnaires and technical documentation. The Survey File release contains the Fee-for-Service (FFS) claims data, which provide CMS administrative information on medical services and payments paid by Medicare claims; claims data for Medicare Advantage beneficiaries are not available. While users can conduct analyses with the Survey File alone, users interested in the Cost Supplement File data will need both LDS files to link cost and utilization variables with demographic or health insurance coverage variables.

Data users should note that some questionnaire sections are asked in the calendar year following the LDS file data year. The reason for this delay is that the reference period, or the timeframe to which the questionnaire item refers, is the prior year. For example, the Income and Assets Questionnaire (IAQ) asks about 2015 income in the 2016 calendar year in order to capture a beneficiary's complete income record for 2015. For survey questions such as these, the calendar year following the LDS file data year is the most reasonable time period to collect the information. Data are released with this in mind. As such, IAQ data collected in Summer 2016 are released with the 2015 LDS files.

Exhibits 7.1.1 and 7.1.2 designate each segment included in the Survey File and Cost Supplement File along with the abbreviation, description, and the equivalent historic segment from the 1991-2013 data release structure.

Exhibit 7.1: 2015 Contents of Data Releases*7.1.1 2015 MCBS Survey File*

The Survey File contains data collected directly from respondents and supplemented by administrative items plus the facility (non-cost) information and FFS claims. The Survey File includes multiple topic-related segments, including health status and limitations, access to care, health insurance coverage, and household characteristics. The Survey File also includes information on Facility interviews including a residence timeline, facility characteristics, and assessment (Minimum Data Set) measures. Finally, topical questionnaire sections (e.g., beneficiary knowledge, drug coverage) are included with this release. To facilitate analysis, the information collected in the survey is augmented with data on the use and program cost of Medicare services from Medicare claims data and administrative data.

Exhibit 7.1.1: 2015 MCBS Survey File Segments and Contents

Survey File Segment	Abbrev	Description	Historic RIC Segment	Respondent Type (C, F, B)*
Access to Care	ACCESSCR	Survey responses related to ability to obtain health care, delay of care related to costs, and reasons for not obtaining needed health care	3	C
Administrative Utilization Summary	ADMNUTLS	Summarized administrative information on Medicare program expenditures and utilization	A	B
Agreement Scale	AGREESCL	A set of items that indicates the beneficiary's overall life attitudes.	New	C
Assistance	ASSIST	Existence and type of assistance that the beneficiary may receive (e.g., assistance with dressing, shopping, eating).	2H	C
Beneficiary Demographics	DEMO	Demographic information collected in the survey and enhanced by Medicare Administrative data.	1, 9, A, K	B
Chronic Conditions	CHRNCOND	Survey responses related to chronic and other diagnosed medical conditions.	2, 2P	C
Facility Assessments	FACASMNT	Assessment information conducted while the beneficiary was a resident in a Medicare approved facility or non-Medicare approved facility.	2F	F
Facility Characteristics	FACCHAR	Contains primarily information from the Facility Questionnaire, plus Skilled Nursing Facility (SNF) stay information, which could include Community residents.	7, 7S	B
Falls	FALLS	Survey responses related to injuries and attitudes related to falls.	2, 2P	C
Food Insecurity	FOODINS	Information regarding the beneficiary's availability to obtain sufficient food. The FOODINS data that was collected in Summer 2016 is released with the 2015 Survey File given that the reference period is 2015. Special non-response adjustment weights are included with this file.	New	C
General Health	GENHLTH	Survey responses regarding a beneficiary's general health status and functioning such as height and weight.	2	C
Health Insurance Summary	HISUMRY	Information on the characteristics of insurance coverage as well as information regarding premiums, co-pays, deductibles, what is covered, and capitated payments.	4, A	B
Health Insurance Timeline	HITLINE	Types of insurance plans and the coverage eligibility timeline.	4, A	B

Survey File Segment	Abbrev	Description	Historic RIC Segment	Respondent Type (C, F, B)*
Household (HH) Characteristics	HHCHAR	Information about the beneficiary's household and home.	5	B
Income and Assets	INCASSET	Data on a beneficiary's income and assets. Income and Assets (IAQ) data were collected in Summer 2016 but released with the 2015 Survey File, because the reference period is 2015. Special non-response adjustment weights are included with this file.	1, Income Asset	B
Interview Characteristics	INTERV	Summarizes the characteristics of the interview such as the type of interview conducted and whether or not a proxy was used.	4, 8, 9, K	B
Medicare Advantage (MA) Plan Questions	MAPLANQX	Augments information from the Access to Care and Satisfaction with Care sections of the questionnaire for beneficiaries enrolled in Medicare Part C.	H	C
Medicare Plan Beneficiary Knowledge	MCREPLNQ	Information about the beneficiary's experience with the Medicare open enrollment period and knowledge about Medicare covered expenses. The Knowledge of Beneficiaries (KNQ) data were collected in Winter 2016 but released with the 2015 Survey File, because the reference period is 2015. Special non-response adjustment weights are included with this file.	KN	C
Minimum Data Set	MDS3	Assessment information conducted while the beneficiary was in an approved Medicare Facility.	MDS, 10	B
NAGI Disability	NAGIDIS	Information on difficulties with and persons responsible for assisting with beneficiary's performance of activities of daily living.	2, 2H, 2P	C
Nicotine and Alcohol	NICOALCO	Information on the prevalence and frequency of alcohol and nicotine use.	2, 2P	C
Outcome and Assessment Information	OASIS	Assessment information conducted while the beneficiary was receiving home health services.	OAS, 10	B
Patient Activation	PNTACT	This questionnaire section is designed to assess the degree to which Medicare beneficiaries actively participate in their own health care and decisions concerning that care. PAQ data were collected in Summer 2016, but released with the 2015 Survey File because the reference period is 2015. Special non-response adjustment weights are included with this file.	PA	C
Preventive Care	PREVCARE	Data on preventative services such as vaccinations and routine screening procedures.	2, 2P	C

Survey File Segment	Abbrev	Description	Historic RIC Segment	Respondent Type (C, F, B)*
Part D Drug Plan Experience	RXPARTD	Augments information from the Access to Care and Satisfaction with Care sections of the questionnaire for those enrolled in Medicare Part D. Drug Coverage (RXQ) data were collected in Summer 2016, but released with the 2015 Survey File because the reference period is 2015. Special non-response adjustment weights are included with this file.	RX	C
Prescription Medicine Usage	PMUSE	Information about prescription medication usage including how beneficiaries pay for prescriptions and why they may not obtain a prescription.	3	C
Residence Timeline**	RESTMLN	Where the beneficiary resided over the course of the year.	6, 9, A, K	B
Satisfaction with Care	SATWCARE	Data on satisfaction with health care and reasons why beneficiaries do not seek medical care.	3	C
Usual Source of Care/PPIC	USCPPIC	Data on where and how the beneficiary typically seeks medical care.	2, 3	C
Vision and Hearing	VISHEAR	Information on the beneficiary's eye health and hearing status.	2	C
Weights	CENWGTS EVRWGTS LNG3WGTS LNG4WGTS	The weights file provides: longitudinal weights for the continuously enrolled population, general-purpose cross-sectional weights, a series of replicate weights, and weights to represent the ever enrolled population.	X, XE, X3, X4,	B
Fee-for-Service Claims	FFS	These files include abbreviated FFS claims data. Claims-like data will be included as they become available in subsequent years (e.g., Encounter Data, Medicaid claims data).	Research Claims	B

* = Respondent type describes the expected setting where beneficiaries resided during the course of the calendar year (i.e., C = respondent only resided in the community and only completed Community-administered survey instruments, F = respondent only resided in a facility and only completed Facility-administered survey instruments, or B = respondents completed instruments in both settings). In each data year, some anomalies by segment will exist (i.e., data may reflect a prior or future calendar year due to the specific questionnaire and reference period used to collect the information).

** = For 2015 only, RESTMLN is included with the Cost Supplement File. For 2016 and beyond, the segment will be included with the Survey File.

7.1.2 2015 MCBS Cost Supplement File

The Cost Supplement File contains both individual event and summary files and can be linked to the Survey File to conduct analyses on healthcare cost and utilization. The Cost Supplement File links survey-reported events to Medicare FFS claims and provides a comprehensive picture of health services received, amounts paid, and sources of payment, including those not covered by Medicare. Survey-reported data include information on the use and cost of all types of medical services, as well as information on supplementary health insurance costs. Medicare FFS claims data includes administrative and billing information on the use and cost of inpatient hospitalizations, outpatient hospital care, physician services, home health care, durable medical equipment, skilled nursing home services, hospice care, and other medical services.¹⁸ The Cost Supplement File can support a broader range of research and policy analyses on the Medicare population than would be possible using either survey data or administrative claims data alone.

The Cost Supplement File undergoes a careful reconciliation process to separately identify and flag health care services reported: 1) from the survey alone, 2) from the claims data alone, and 3) from both sources. This process results in a file with a much more complete and accurate picture of health services received, amounts paid, and sources of payment. Due to the added processing time required to reconcile survey reported events with the claims data, this file is generally released 18 months after the close of the calendar year for data collection.

¹⁸ Only Medicare claims for beneficiaries enrolled in Medicare Fee-for-Service (FFS, often called 'traditional' Medicare), are available for linkage; similar claims information for Medicare Advantage (MA) beneficiaries is not available. To the extent that health care use and costs may be underreported in the survey, or reported differentially between FFS and MA beneficiaries, this will be reflected in the data as MA beneficiaries' information will not be supplemented by claims data. In 2015, MA beneficiaries accounted for nearly one in three Medicare beneficiaries (<https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Dashboard/Medicare-Enrollment/Enrollment%20Dashboard.html>).

Exhibit 7.1.2: 2015 MCBS Cost Supplement File Segments and Contents

Cost Supplement Segment	Abbrev	Description	Historic RIC Segment
Durable Medical Equipment Bills	DME	This file contains the Medicare FFS claims for the MCBS population that involves the use or purchase of certain medical equipment.	DME
Facility Events	FAE	This file includes individual facility events for the MCBS population. There is one record for each stay that occurred at least partly in the data year.	FAE
Inpatient Hospital Events	IPE	This file contains individual inpatient hospital events for the MCBS population.	IPE
Institutional Events	IUE	This file contains individual short-term facility (usually SNF) stays for the MCBS population that were reported during a community interview or created from Medicare claims data.	IUE
Medical Provider Events	MPE	This file contains individual events for a variety of medical services, equipment, and supplies.	MPE
Dental Utilization Events	DUE	This file contains individual dental events for the MCBS population.	DUE
Outpatient Hospital Events	OPE	This file contains individual outpatient hospital events for the MCBS population.	OPE
Prescribed Medicine Events	PME	This file contains individual outpatient prescribed medicine events for the MCBS population.	PME
Person Summary	PS	Summarization of utilization and expenditures by type of service and summarization of expenditures by payer, yielding one record per person.	PS
Service Summary	SS	Summarization of the seven individual event files along with home health and hospice utilization, yielding a total of nine summary records per person.	SS
Residence Timeline*	RESTMLN	Where the beneficiary resided over the course of the year.	6, 9, A, K
Cost Supplement Ever Enrolled Weights	CSEVRWGT	The Weights file provides weights for the ever enrolled population who had cost and utilization information, including general-purpose weights and a series of replicate weights.	X

* = For 2015 only, RESTMLN is included with the Cost Supplement File. For 2016 and beyond, the segment will be included with the Survey File.

As an aid to users, the Cost Supplement File data are provided at three different levels of summarization: event level, person summary level (PS), and service summary (SS) level. The tri-level structure allows analysts to fit the research problem they are addressing to the available file summary levels, and potentially avoid having to process all the detailed event records in the file when summaries may suffice. For example, an analysis of differences in total health spending per person between men and women could use the person level summary, and thereby avoid having to process the more numerous event level records. Similarly, an analysis of differences in use of Medicare hospital payments by race could use the type of service summary records. Event level records would be used for more detailed analyses, for example, average length of long-term facility stays or average reimbursements per prescription drug type. For a more complete discussion of the tri-level file structure, see the MCBS Data User's Guide: Cost Supplement File document.

7.1.3 Using the Data

The MCBS data releases are made available in two formats: SAS[®] formatted files, and comma delimited files for use with Stata[®] and R[®]. Directions and sample SAS code are given below to help users read the dataset into SAS.

Files with programming code to create formats and labels are provided for both SAS users and for use with comma delimited files.

7.1.4 Research Claims Files

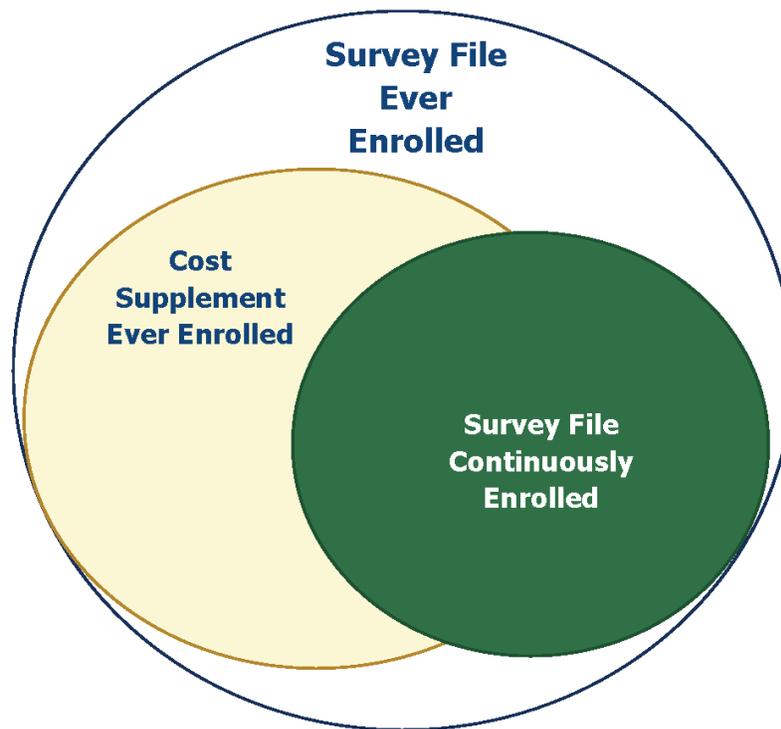
The fixed-length claims (also known as the research claims) are abbreviated versions of the full claim record layout. Each claim type has a subset of variables selected for their relevancy to data analysis of that service. Additionally, institutional claim types have a corresponding revenue center file that links back to the claim-level data file through a unique claim identifier. See the data file-specific Data User's Guide documents for more on the claims file specifications.

There is one observation per data record for all of the MCBS claims files except the Physician/Supplier Claims and DME Claims. Those claim types treat each line item as a separate observation with the claim-level detail repeating for each line item.

7.2 Which File Do I Need?

The identification of the target population for a given research question will influence both the selection of weights and the particular segments that a data user will need to conduct analyses. Exhibit 7.2 depicts the relationship between the beneficiaries included in the annual data releases.¹⁹ The ever enrolled population from the Survey File is the largest, including anyone enrolled at any time during the calendar year. The continuously enrolled population is limited to those beneficiaries who were enrolled from January 1 of the survey year through the fall interview date. The Survey File includes a weights segment that allows for subsetting the data by the ever enrolled and continuously enrolled populations. The Cost Supplement File includes a weights segment that allows for subsetting the data by the ever enrolled population.

¹⁹ Exhibit 7.2 is not drawn to scale, but provided as a visual reference for the relationship of populations between data files.

Exhibit 7.2: MCBS Populations in Data Products

7.2.1 Survey File Only

Users who wish to focus on research questions around health-related topics such as health status and access to care and/or Medicare FFS utilization only need the Survey File. Similarly, data users conducting year-to-year or longitudinal analyses with the 1991 through 2013 Access to Care files only need the Survey File to make comparisons of services.

7.2.2 Using Both Survey File and Cost Supplement File

To the extent that a data user needs demographic and health insurance information to conduct research on the cost and utilization of medical services, both the Survey File and the Cost Supplement File are required. Data users must also use the ever enrolled cost weights when analyzing any cost data from the Cost Supplement File combined with survey-reported information from the Survey File. For more information on using the weights, please see [Section 8.2: Weighting](#).

8. TECHNICAL NOTES ON USING THE DATA

8.1 Merging Segments within 2015

Data users can merge segments within and/or across the Survey File and Cost Supplement File. Appendix C provides a hypothetical research question with sample SAS[®] code for the construction of an analytic file using the 2015 Survey File LDS.

8.2 Weighting

8.2.1 Preparing Statistics (Using the Full Sample Weights)

The data user may choose to conduct analyses of the Survey File data alone or use the Cost Supplement data to conduct joint analyses of both survey and cost and utilization data. Exhibit 8.2.1 provides an overview of the weights for the 2015 Survey File and Cost Supplement File. For analysis of Survey File data, there are two populations of inference that can be obtained through the use of two distinct weights. The ever enrolled Survey File weight is greater than zero for all beneficiaries in the Survey File. This weight segment is EVRWGTS and the name of the weight is EEYRSWGT. The sum of this weight represents the population of beneficiaries who were entitled and enrolled in Medicare for at least one day at any time during the calendar year.

The continuously enrolled Survey File weight is greater than zero for the subset of beneficiaries in the Survey File who were continuously enrolled in Medicare from January 1, 2015, through completion of their Fall interview. This weight segment is CENWGTS and the weight is named CS1YRWGT. The population represented by the sum of this weight is the continuously enrolled population of Medicare beneficiaries who were enrolled from the first of the year through the Fall of 2015.²⁰ Users should use the continuously enrolled Survey File weight (CS1YRWGT) for time series analysis of survey data across years.

Analyses of the Cost Supplement File data should be done with the Cost Supplement weight, which represents an ever enrolled population of Medicare beneficiaries enrolled in Medicare on at least one day at any time in 2015. The Cost Supplement weights segment is named CSEVRWGT. The population represented by the sum of this weight is identical to the population represented by the sum of the ever enrolled Survey File weight, but it is populated for a smaller subset of respondents with complete cost and utilization data. Users wishing to conduct joint analysis of both Survey File and Cost Supplement File data should use the Cost Supplement File weights.

The weights mentioned above for the calendar year 2015 are full-sample weights. The term “full-sample” distinguishes these weights from the replicate weights used for variance estimation, as discussed in the [Section 8.3: Variance Estimation](#). Additional information on using the weights is available in the file-specific MCBS Data User’s Guide documents that accompany each data file release.

Topical questionnaire modules related to the Survey File and Cost Supplement File are weighted separately as they are fielded in the winter and summer rounds following the data year. There are two sets of full-sample and replicate weights for each module, one based on the 2015 Survey File continuously-enrolled population, and the other based on the 2015 Cost Supplement ever-enrolled population. These weights may be used to

²⁰ This is identical to the historical Access to Care (ATC) cross-sectional weight that was available in previous years.

conduct joint analyses of topical module data, Survey File data, and Cost Supplement data. The topical module weights, segments, and weight names are listed in Exhibit 8.2.1.

Exhibit 8.2.1: 2015 MCBS Data Files Summary of Weights

Limited Data Set	Description	Segment	Full-Sample Weight	Replicate Weights	Population
Survey File	Continuously Enrolled Cross-Sectional Weights	CENWGTS	CS1YRWGT	CS1YR001-CS1YR100	Continuously enrolled from 1/1/2015 through the fall of 2015
Survey File	Ever Enrolled Cross-Sectional Weights	EVRWGTS	EEYRSWGT	EEYRS001-EEYRS100	Ever enrolled for at least one day at any time during 2015
Survey File	Continuously Enrolled One-Year Longitudinal Weights	Will not be released in 2015	-	-	Continuously enrolled from 1/1/[2015-1] through the fall of 2015
Survey File	Continuously Enrolled Two-Year Longitudinal Weights	LNG3WGTS	L3YRSWGT	L3YRS001-L3YRS100	Continuously enrolled from 1/1/[2015-2] through the fall of 2015
Survey File	Continuously Enrolled Three-Year Longitudinal Weights	LNG4WGTS	L4YRSWGT	L4YRS001-L4YRS100	Continuously enrolled from 1/1/[2015-3] through the fall of 2015
Cost Supplement File	Ever Enrolled Cross-Sectional Weights	CSEVRWGT	CSEVRWGT	CSEVR001-CSEVR100	Ever enrolled for at least one day at any time during 2015
Cost Supplement File	Two-Year Longitudinal Weights	Will not be released in 2015	-	-	Enrolled on or before 1/1/[2015-2] and still enrolled at any time during 2015
Cost Supplement File	Three-Year Longitudinal Weights	Will not be released in 2015	-	-	Enrolled on or before 1/1/[2015-3] and still enrolled at any time during 2015
Survey File Topical Section	KNQ Continuously Enrolled	MCREPLNQ	KNCWT	KNC1-KNC100	Continuously enrolled in 2015 and still alive, entitled, and non-institutionalized in Winter 2016
Survey File Topical Section	KNQ Ever Enrolled	MCREPLNQ	KNEWT	KNE1-KNE100	Ever enrolled in 2015 and still alive, entitled, and non-institutionalized in Winter 2016
Survey File Topical Section	IAQ Continuously Enrolled	INCASSET FOODINS	IACWT	IAC1-IAC100	Continuously enrolled in 2015 and still alive, entitled, and non-institutionalized in Summer 2016

Limited Data Set	Description	Segment	Full-Sample Weight	Replicate Weights	Population
Survey File Topical Section	IAQ Ever Enrolled	INCASSET FOODINS	IAEWT	IAE1-IAE100	Ever enrolled in 2015 and still alive, entitled, and non-institutionalized in Summer 2016
Survey File Topical Section	PAQ Continuously Enrolled	PNTACT	PACWT	PAC1-PAC100	Continuously enrolled in 2015 and still alive, entitled, and non-institutionalized in Summer 2016
Survey File Topical Section	PAQ Ever Enrolled	PNTACT	PAEWT	PAE1-PAE100	Ever enrolled in 2015 and still alive, entitled, and non-institutionalized in Summer 2016
Survey File Topical Section	RXQ Continuously Enrolled	RXPARTD	RXCWT	RXC1-RXC100	Continuously enrolled in 2015 and still alive, entitled, and non-institutionalized in Summer 2016
Survey File Topical Section	RXQ Ever Enrolled	RXPARTD	RXEWT	RXE1-RXE100	Ever enrolled in 2015 and still alive, entitled, and non-institutionalized in Summer 2016

8.2.2 Item Non-Response

As in any other survey, some respondents could not, or would not, supply answers to some questions. Item non-response rates are generally low in the MCBS data release, but the analyst still needs to be aware of the missing data and be cautious about patterns of non-response. Beginning in 2015, item non-response types are indicated by missing type codes in SAS, including refusal to answer, don't know the answer, and invalid skip. The code .D represents a "don't know" response, the code .R represents a "refused" response, and .N represents an "invalid skip" response.

Some of the missing data are attributable to the fact that some of the Community interviews and all of the Facility interviews are conducted through a proxy respondent. In other words, the respondent may not have had knowledge of the information sought on the sample person. In other situations the respondent may have simply refused to answer.

8.2.3 Imputation

There are several techniques for handling cases with missing data. One option is to impute the missing data. This can be done in such a way as to improve univariate tabulations, but techniques that retain correlation structure for multivariate analyses are extremely complex. For more discussion of imputation, see Kalton and Kasprzyk.²¹

The 2015 IAQ imputation used IAQ data reported in 2016, as the 2016 IAQ asks about total income in the prior year (2015). We imputed different sets of variables for respondents to the 2016 IAQ and for the 2015 ever enrolled respondents that did not complete the 2016 IAQ. For the first group, we imputed a selection of variables from the 2016 IAQ. These include probe variables, which are indicators of whether the beneficiary and/or the spouse have income or asset items, and amount variables, which give the amount of the income or asset items that the beneficiary and/or the spouse have. For the second group, only the amount of total income was imputed.

We created one imputation flag for each imputed variable. For the probes, only hot deck imputation method was used, so the imputation flags indicate whether the probe was imputed or not. For the amounts, we used a variety of imputation methods. The imputation flags indicate whether the amount was not imputed, imputed by hot deck method, imputed by carry forward method, or imputed by data edits. The imputation used information from the Income and Assets and Facility Assessments Survey File segments and demographic information from the Beneficiary Demographics and Household Characteristics segments.

Using information from the Cost Supplement File segments and Medicare claims data, we imputed missing payer and payment information for medical events reported in 2015. We first imputed whether or not a payer, such as an insurance plan, paid for a particular event. If the payer paid, then the amount paid was imputed next. Imputation was performed using the hot deck imputation method, and a flag was created for each imputed variable indicating whether or not the corresponding cost value was imputed.

²¹ Kalton, Graham, and Daniel Kasprzyk. "The treatment of missing survey data." *Survey methodology* 12, no. 1 (1986): 1-16.

8.3 Variance Estimation (Using the Replicate Weights)

8.3.1 Variables Available for Variance Estimation

In many statistical packages, the procedures for calculating sampling errors (e.g., variances, standard errors) assume that the data were collected in a simple random sample. Procedures of this type are not appropriate for calculating the sampling errors of statistics based upon a stratified, unequal-probability, multi-stage sample such as the MCBS. The MCBS includes variables to obtain weighted estimates and estimated standard errors using either the Taylor-series linearization approach or balanced repeated replication (Fay's method). For details on the strengths and weaknesses of the two variance estimation methods, please refer to Wolter.²²

The variables SUDSTRAT (sampling strata) and SUDUNIT (primary sampling unit) are used for variance estimation using the Taylor-series linearization method. To estimate variance using the balanced repeated replication method, a series of replicate weights are included in the 2015 Survey File release for each of the five types of weights described above. Unless the complex nature of the MCBS is taken into account, estimates of the variance of a survey statistic may be biased downward.

As displayed in Exhibit 8.2.1 above, there are five types of full-sample weights, two for cross-sectional analyses and three for longitudinal analyses, and five corresponding sets of replicate weights. The replicate weights can be used to calculate standard errors of the sample-based estimates as described below. For the Survey File, the replicate cross-sectional weights are labeled CS1YR001 through CS1YR100 corresponding to the continuously enrolled weight CS1YRWGT, and EEYRS001 through EEYRS100 corresponding to the ever enrolled weight EEYRSWGT. These weights may be found on CENWGTS and EVRWGTS respectively. The Survey File replicate longitudinal weights are found on segments LNG3WGTS and LNG4WGTS.

The Survey File's two-year longitudinal weights (LNG3WGTS) are populated only for members of the 2012 and 2013 panels who were continuously enrolled in each of the years 2013, 2014, and 2015. The population represented by these weights is the population of beneficiaries enrolled on or before 1/1/2013 and surviving and entitled as of completion of the Fall 2015 interview. The three-year longitudinal weights (LNG4WGTS) are populated only for members of the 2012 panel that were continuously enrolled during all of the years 2012-2015. The resulting weights represent the population of Medicare beneficiaries that enrolled on or before 1/1/2012 and were still alive and entitled as of completion of the Fall 2015 interview.

8.3.2 Variance Estimation for Analyses of Single Year of MCBS

Most commercial software packages today include techniques to accommodate the complex design, either through Taylor-expansion type approaches or replicate weight approaches. Among these are R[®], STATA[®], SUDAAN[®], and the complex survey procedures in SAS[®].

8.3.3 Subgroup Analysis

When analyzing survey data, researchers are often interested in focusing their analyses on specific subgroups of the full population sample (e.g., Medicare beneficiaries age 65 and older, Hispanics, or females). A common pitfall when performing sub-group analysis of survey data when variance estimation methods such as Taylor-series is used, is to delete or exclude observations not relevant to the subgroup of interest. Standard errors for MCBS estimates are most accurate when the analytic file includes all beneficiaries. However, when replicate weights are used for variance estimation, deleting observations not relevant to the subgroup of interest prior

²² Wolter, Kirk. Introduction to variance estimation. Springer Science & Business Media, 2007.

to analyzing the subgroup will still produce accurate standard errors. Almost all statistical packages provide the capability to limit the analysis to a subgroup of the population.

8.4 Combining Multiple Years of Data

The MCBS is based on a rotating panel design, which allows for longitudinal analysis of up to three years when appropriate longitudinal weights are used. Multiple years of MCBS data can also be pooled to perform serial cross-sectional or pooled analysis. The appropriate method to combine data across years will depend on the analytic design of the study. Sample code is presented in Appendix C to demonstrate the steps involved in combining multiple years of data to perform two types of analysis: (1) Longitudinal analysis; (2) Pooled, cross-sectional analysis.

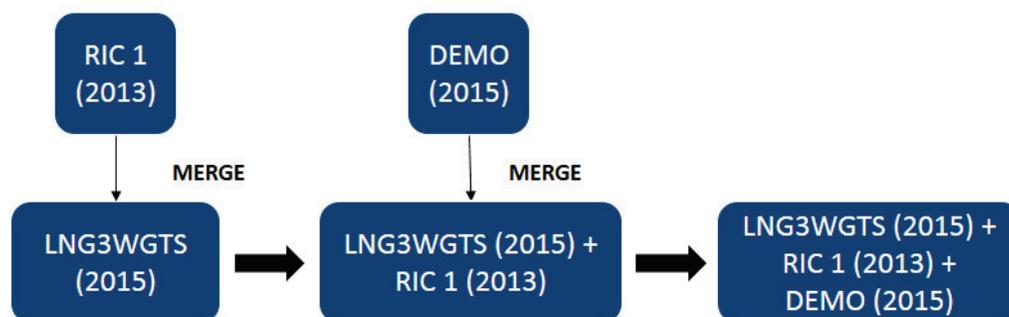
8.4.1 Longitudinal Analysis

The study objective in longitudinal analysis is to assess changes over time for each sample person. Most longitudinal analyses require the data to be in 'long-format' (i.e. repeated observations – each representing a calendar year the sample person was surveyed – are stored in a separate row for each sample person). To construct a longitudinal analytic dataset, the first step is to use the appropriate longitudinal weights file. For example, as shown in Exhibit 8.4.1, to assess changes over time beneficiaries who have been in the sample for at least three years – from CY2013 to CY2015 – the two-year "backward longitudinal weights" (LNG3WGTS) should be used.

Please note that because 2014 MCBS data was not released, the examples in this section use MCBS data for 2013 and 2015 and, thus, demonstrate how to construct an analytic file with the two-year backward longitudinal weights segment (LNG3WGTS). Beginning with data year 2016, the Survey File LDS will include a one-year backward longitudinal weight that can be used for longitudinal analyses of 2015 and 2016 data.

Variables from current year files representing the outcome of interest should then be merged with the current year's "backward longitudinal weights" file. While merging, all observations in the weights file should be preserved. Next, the same variables from the prior year's files should be merged with the current year's "backward longitudinal weights" file.

Exhibit 8.4.1: Constructing a Longitudinal Analytic File



Variance estimation for longitudinal analysis (using replicate weights)

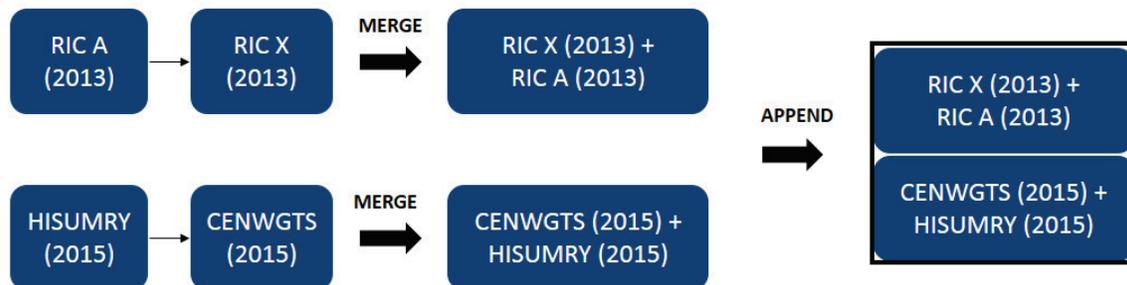
Just as there are full-sample "backward longitudinal weights", there are corresponding sets of replicate weights. The replicate weights included in the "backward longitudinal weights" data files can be used to

calculate standard errors of the sample-based estimates. The first set of replicate longitudinal weights is labeled L3YRS001 through L3YRS100 and may be found on the two-year “backward longitudinal weights” file (LNG3WGTS). The second set of replicate longitudinal weights is labeled L4YRS001 through L4YRS100 and may be found on the three-year “backward longitudinal weights” file (LNG4WGTS).

8.4.2 Repeated Cross-Sectional or Pooled Analysis

Multiple years of MCBS data can be pooled to perform serial cross-sectional or pooled analysis. Repeated cross-sectional analysis is used for analyzing changes in the Medicare population as a whole over time. In contrast, the longitudinal analysis described earlier is used to analyze beneficiary level changes over time. Pooled data analysis yield estimates that are in effect a moving average of nationally representative year-specific estimates. The pooled estimates can be interpreted as being representative of the midpoint of the calendar year of the pooled period. Exhibit 8.4.2 demonstrates the steps involved in constructing a repeated cross-sectional or pooled analytic dataset using CY2013 and CY2015 data.²³ For each year in the study, variables representing the outcome of interest should then be merged with the cross-sectional weights file. While merging, all observations in the weights file should be preserved. Next, the year-specific files are appended to produce the analytic dataset.

Exhibit 8.4.2: Constructing a Repeated Cross-Section or Pooled Analytic File



Variance estimation for repeated cross-sectional or pooled analysis (using replicate weights)

Due to the rotating-panel and multistage-sampling design of the MCBS, there is both serial and intra-cluster correlation in the data when pooling multiple years of data. Using the balanced half-sample method (also known as the balanced repeated replication, or BRR, method) of variance estimation throughout appropriately accounts for the various correlations due to sampling second-stage units within primary sampling units, sampling beneficiaries within second-stage units, and repeated observations of the selected beneficiary across time. The replicate cross-sectional weights are labeled CS1YR001 through CS1YR100 and can be found in each year’s cross-sectional weights file (CENWGTS).²⁴

²³ Please note that because 2014 MCBS data was not released, the examples in this section use MCBS data for 2013 and 2015.

²⁴ The cross-sectional weights for the CY2013 data and prior years are available in the file RICX.

9. REFERENCES

- Eicheldinger, Celia, and Arthur Bonito. "More accurate racial and ethnic codes for Medicare administrative data." *Health care financing review* 29, no. 3 (2008): 27.
- Kalton, Graham, and Daniel Kasprzyk. "The Treatment of Missing Survey Data." *Survey methodology* 12, no. 1 (1986): 1-16.
- Lo, A, A Chu, and R Apodaca. "Redesign of the Medicare Current Beneficiary Survey Sample." *Proceedings of the Survey Research Section of the American Statistical Association* (2002): 2139-44.
- National Health and Aging Trends Study. Round 1 Data Collection Instrument Sections, Income and Assets. https://www.nhats.org/scripts/instruments/40_IA_Round_1_Finalv2.pdf.
- Singer, Sara J., Mark W. Friedberg, Mathew V. Kiang, Toby Dunn, and Diane M. Kuhn. "Development and preliminary validation of the patient perceptions of integrated care survey." *Medical Care Research and Review* 70, no. 2 (2013): 143-164.
- Wolter, Kirk. *Introduction to variance estimation*. Springer Science & Business Media, 2007.

APPENDICES

10. APPENDICES

Appendix A: Glossary

Activities of daily living (ADLs): Activities of daily living are activities related to personal care. They include bathing or showering, dressing, getting in and out of bed or a chair, walking, using the toilet, and eating.

Baseline interview: The initial questionnaire administered to new respondents to the study; administered in the fall of the year they are selected into the sample (interview #1).

Beneficiary: An individual selected from MCBS' sample about whom the MCBS collects information. Beneficiary may also refer to a person receiving Medicare services who may or not be participating in the MCBS.

Claim-only event: A claim-only event is a medical service or event known only through the presence of a Medicare claim. The event did not originate from an event or service reported by a respondent during an interview.

Community component: Survey of beneficiaries residing in the community at the time of the interview (i.e., not in a long-term care facility such as a nursing home). Beneficiaries answered health status and functioning questions themselves, unless they were unable to do so.

Continuing interview: The questionnaire administered to repeat respondents as they progress through the study (interviews #2-12).

Continuously enrolled (aka always enrolled): A Medicare beneficiary who was enrolled in Medicare from the first day of the calendar year until the fall interview and did not die prior to the fall round. This population excludes beneficiaries who enrolled during the calendar year 2015, those who dis-enrolled or died prior to their fall interview, residents of foreign countries, and residents of U.S. possessions and territories other than Puerto Rico.

Core modules: These sections of the MCBS Questionnaire are of critical purpose and policy relevancy to the MCBS, regardless of season of administration.

Crossover: A respondents who enters a long-term care facility setting (e.g., nursing homes) or who alternates between a community and a facility setting.

Ever enrolled: A Medicare beneficiary who was enrolled at any time during the calendar year including those who dis-enrolled or died prior to their fall interview. Excluded from this population are residents of foreign countries and of U.S. possessions and territories other than Puerto Rico.

Exit interview: Conducted in the summer round, this interview completes the respondent's participation in the MCBS (interview #12). The exit interview is a special case of the Continuing interview.

Facility component: Survey of beneficiaries residing in facilities, such as long-term care nursing homes or other institutions, at the time of the interview. Facility interviewers do not conduct the Facility component with the respondent, but with a staff member located at the facility. This is a key difference between the Community and Facility components.

Fee-for-Service (FFS) payment: Fee-for-Service is a method of paying for medical services in which each service delivered by a provider bears a charge. This charge is paid by the patient receiving the service or by an insurer on behalf of the patient.

Field interviewer: The principal contact for collecting and securing respondent data.

Field manager: A supervisor who motivates and manages a group of field interviewers to meet the goals of high quality data collection on time and within budget limits.

Incoming Panel Sample (formerly known as Supplemental Panel): A scientifically selected group of sampled beneficiaries that enter the MCBS in the fall of a data collection year. One panel is retired during each summer round, and a new panel is selected to replace it each fall round. Panels are identified by the data collection year (e.g., 2015 panel) in which they were selected.

Instrumental activities of daily living (IADLs): Instrumental activities of daily living are activities related to independent living. They include preparing meals, managing money, shopping for groceries or personal items, performing light or heavy housework, and using a telephone. If a beneficiary had any difficulty performing an activity by himself/herself, or did not perform the activity at all, because of health problems, the person was deemed to have a limitation in that activity. The limitation may have been temporary or chronic at the time of the survey. Facility interviewers did not ask about the beneficiary's ability to prepare meals or perform light or heavy housework, since they are not applicable to the beneficiary's situation; however, interviewers did question proxies about the beneficiary's ability to manage money, shop for groceries or personal items, or use a telephone.

Internal Sample Control File: A data file that contains every beneficiary sampled back through the beginning of MCBS. The file contains sampling information, year of selection, primary sampling unit, secondary sampling unit, contact information, and other sampling demographic information as well as final disposition codes to indicate completion status per round, component fielded per round, dates of death, and lost entitlement information.

Long-term care facility: A facility that provides rehabilitative, restorative, and/or ongoing skilled nursing care to patients or residents in need of assistance with activities of daily living.

Medicare: Medicare is the federal health insurance program for people who are 65 or older, certain younger people with disabilities, and people with End-Stage Renal Disease (permanent kidney failure requiring dialysis or a transplant, sometimes called ESRD). The different parts of Medicare help cover specific services:

- Hospital Insurance (Part A): covers inpatient hospital stays, care in a skilled nursing facility, hospice care, and some home health care.
- Medical Insurance (Part B): covers certain doctors' services, outpatient care, medical supplies, and preventive services.
- Medicare Advantage (Part C): an alternative to coverage under traditional Medicare (Parts A and B), a health plan option similar to a Health Maintenance Organization (HMO) or Preferred Provider Organization (PPO) administered by private companies.
- Prescription Drug Coverage (Part D): additional, optional coverage for prescription drugs administered by private companies.

For more information, please visit the Medicare.gov website at <https://www.medicare.gov/sign-up-change-plans/decide-how-to-get-medicare/whats-medicare/what-is-medicare.html>

Medicare Advantage (MA): Medicare Advantage Plans, sometimes called “Part C” or “MA Plans,” are offered by private companies approved by Medicare. An MA provides, or arranges for the provision of, a comprehensive package of health care services to enrolled persons for a fixed capitation payment. The term “Medicare Advantage” includes all types of MAs that contract with Medicare, encompassing risk MAs, cost MAs, and health care prepayment plans (HCPPs).

Medicare beneficiary (aka, beneficiary): An individual who meets at least one of three criteria (is aged 65 years or older, is under age 65 with certain disabilities, or is of any age with End-Stage Renal Disease) and is entitled to health insurance benefits. (Source: <https://www.cms.gov/Medicare/Medicare-General-Information/MedicareGenInfo/index.html>).

Minimum Data Set (MDS): The Minimum Data Set (MDS) is part of the federally mandated process for clinical assessment of all residents in Medicare and Medicaid certified nursing homes. For more information, please visit <https://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/Minimum-Data-Set-3-0-Public-Reports/index.html>.

Panel: see Incoming Panel Sample

Personal health care expenditures: Personal health care expenditures consist of health care goods and services purchased directly by individuals. They exclude public program administration costs, the net cost of private health insurance, research by nonprofit groups and government entities, and the value of new construction put in place for hospitals and nursing homes.

Prescription medicines: The basic unit measuring use of prescription medicines is a single purchase of a single drug in a single container. Prescription drug use is collected only for beneficiaries living in the community or in a facility, and does not include prescription medicines administered during an inpatient hospital stay.

Primary Sampling Unit (PSU): Primary sampling unit refers to sampling units that are selected in the first (primary) stage of a multi-stage sample ultimately aimed at selecting individual elements (Medicare beneficiaries in the case of MCBS). PSUs are made up of major geographic areas consisting of metropolitan areas or groups of rural counties.

Race/ethnicity: Responses to race and ethnicity questions were recorded as interpreted by the respondent. Respondents who reported they were white and not of Hispanic origin were coded as white non-Hispanic; those who reported they were black/African-American and not of Hispanic origin were coded as black non-Hispanic; persons who reported they were Hispanic, regardless of their race, were coded as Hispanic; persons who reported they were American Indian, an Asian or Pacific Islander, or other race and not of Hispanic origin were coded as other race/ethnicity. Hispanic includes persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race. Respondents with more than one racial background were captured in a separate category and collapsed into the “other” category.

Reference Period: The timeframe to which a questionnaire item refers.

Residence status: Full-year community residents are Medicare beneficiaries who lived solely in household units during the data collection year and who received community interviews only. Full-year facility residents are Medicare beneficiaries who lived solely in a long-term care facility during the data collection year and who received Facility interviews only. Part-year community/part-year facility residents are Medicare beneficiaries who lived part of the year in the community and part of the year in a long-term care facility, and who received both Community and Facility interviews. Skilled nursing facility users are Medicare beneficiaries who lived in either the community or a facility, and who used skilled nursing facility services during the data collection year.

Respondent: The person who answers questions about the beneficiary for the MCBS; this person can be the beneficiary themselves, a proxy, or a staff member located at a facility where the beneficiary resides.

Round: The MCBS data collection period. There are three distinct rounds each year; winter (January through April); summer (May through August); and fall (September through December).

Sample person: An individual beneficiary selected from MCBS' Incoming Panel sample to participate in the MCBS survey.

Survey-reported event: A survey-reported event is a medical service or event reported by a respondent during an interview. The event may have been matched to a Medicare claim, or it may be a survey-only event, in which case it was not matched to a Medicare claim and is only known through the survey.

Secondary Sampling Unit (SSU): SSUs are made up of census tracts or groups of tracts within the selected PSUs.

Topical sections: Sections of the MCBS Questionnaire that collect information on special interest topics. They may be fielded every round or on a seasonal basis. Specific topics may include housing characteristics, drug coverage, and knowledge about Medicare.

Ultimate Sampling Unit (USU): USUs are Medicare beneficiaries selected from within the selected SSUs.

Appendix B: MCBS Rounds by Data Year and Season

Year	Winter	Summer	Fall
1991	n/a	n/a	1
1992	2	3	4
1993	5	6	7
1994	8	9	10
1995	11	12	13
1996	14	15	16
1997	17	18	19
1998	20	21	22
1999	23	24	25
2000	26	27	28
2001	29	30	31
2002	32	33	34
2003	35	36	37
2004	38	39	40
2005	41	42	43
2006	44	45	46
2007	47	48	49
2008	50	51	52
2009	53	54	55
2010	56	57	58
2011	59	60	61
2012	62	63	64
2013	65	66	67
2014	68	69	70
2015	71/72	71/72	73
2016	74	75	76

Appendix C: Technical Appendix

Merging Segments within the 2015 Survey File LDS (Section 8.1)

Data users can merge segments within and/or across the Survey File and Cost Supplement File. What follows below is a hypothetical research question with sample SAS[®] code for the construction of an analytic file. In this example, we are interested in studying the usual source of care for community-dwelling Medicare beneficiaries with diabetes.

First, there are two measures required to identify our study population: residence status and self-reported diabetes. These variables can be found in the following Survey File segments, respectively: Demographics (DEMO) and Chronic Conditions (CHRNCOND). Usual source of care information is found in the Usual Source of Care/PPIC (USCPPIC). To ensure estimates are representative of the continuously enrolled Medicare population, we will also require the CENWGTS file.

Below, we show how multiple Survey File segments can be merged with the CENWGTS segment in SAS using BASEID as the key variable. When merging segments, all observations in the CENWGTS segment should be preserved.

```
data merged;
  merge survey15.CENWGTS (in=a)
        survey15.DEMO (keep = BASEID H_AGE INT_TYPE)
        survey15.CHRNCOND (keep = BASEID OCDDTYPE)
        survey15.USCPPIC (keep = BASEID PLACEPAR PLACEKND);
  by BASEID;
  if a;
run;
```

In order to segment the file to community-dwelling beneficiaries only, we would then segment the file on the variable INT_TYPE.

```
data merged_surveyfile;
  set merged;
  where INT_TYPE = 'C'; /* denotes individuals living only in the community */
run;
```

We now have an analytic file that includes all the Survey File variables and weights required to analyze usual source of care for community-dwelling Medicare beneficiaries with diabetes.

SAS Output:

```
proc print data=merged_surveyfile(obs=10);
  var BASEID H_AGE INT_TYPE OCDDTYPE PLACEPAR PLACEKND;
run;
```

*Repeated Cross-Sectional or Pooled Analysis (Section 8.4.2)***Sample code and output**

The sample code below demonstrates the steps involved in constructing a repeated cross-sectional or pooled analytic dataset and performing analysis. The example estimates percent of Medicare beneficiaries that are dual eligibles (i.e. enrolled in both Medicare and Medicaid programs) during CY2013 and CY2015.

Although the MCBS includes variables to obtain weighted estimates and estimated standard errors using Taylor-series linearization approach, the balanced repeated replication (Fay's method) method provides more analytic flexibility when performing analysis using pooled cross-sectional data.²⁵ Therefore, the examples presented in this section involving multiple years of MCBS data use replicate weights – a form of the BRR technique.

Example

```
/* Create Analytic Dataset for Repeated Cross-Section or Pooled Analysis */
/* Merge 2015 administrative records (HISUMRY) file with 2015 cross-sectional weights (CENWGTS) file */
data mcbs15;
    merge survey15.CENWGTS (in = a drop = VERSION)
          survey15.HISUMRY (keep = BASEID H_OPMDCD);
    by BASEID;
    YEAR = 2015;
    if a;
run;

/* Merge 2013 administrative records (RIC-A) file with 2013 cross-sectional weights (RICX) file */

data mcbs13(drop = OP_MDCCD);
    merge survey13.RICX (in = a drop = VERSION)
          survey13.RICA (keep = BASEID OP_MDCCD);
    by BASEID;
    YEAR=2013;
    H_OPMDCCD = input(OP_MDCCD, best8.);
    if a;
run;

/* Append 2013 and 2015 cross-sectional files */
data mcbs_analytic_file;
    set mcbs13 mcbs15;
run;
```

SAS Output:

```
proc print data=merged_surveyfile(obs=10);
    var BASEID H_AGE INT_TYPE OCDTYPE PLACEPAR PLACEKND;
run;
```

²⁵ Given the rotating panel design of the MCBS, performing pooled cross-sectional analysis using Taylor-Series Linearization method of variance estimation will require additional adjustments to account for non-independence of beneficiaries across years in a multi-year dataset.

SAS

* Estimate Percent of Medicare Beneficiaries that are Dually-Eligible (Pooled estimate representing the moving average of nationally representative year-specific estimates) (using balanced repeated replication (Fay's method));

```
proc surveyfreq data = mcbs_analytic_file varmethod = brr (fay=.30);
  table H_OPMDCD;
  weight CS1YRWGT;
  repweights CS1YR001 - CS1YR100;
run;
```

* Estimate Percent of Medicare Beneficiaries that are Dually-Eligible by Year (nationally representative, year-specific estimates) (using balanced repeated replication (Fay's method));

```
proc surveyfreq data = mcbs_analytic_file varmethod = brr (fay=.30);
  table YEAR * H_OPMDCD / row;
  weight CS1YRWGT;
  repweights CS1YR001 - CS1YR100;
run;
```

Stata

* Declare survey dataset

```
svyset _n [pweight= CS1YRWGT], brrweight(CS1YR001-CS1YR100) fay(.3) vce(brr)
```

* Estimate Percent of Medicare Beneficiaries that are Dually-Eligible (Pooled estimate representing the moving average of nationally representative year-specific estimates)

```
svy brr, fay(.3): tab H_OPMDCD
```

* Estimate Percent of Medicare Beneficiaries that are Dually-Eligible (nationally representative, year-specific estimates)

```
svy brr, fay(.3): tab h_opmdcd year, column
```

R

Note: Data users will need to install the need to install the 'survey' package to use the svrepdesign function below.

Specify survey design object

```
mcbs <- svrepdesign(
  weights = ~CS1YRWGT,
  repweights = "CS1YR[001-100]+",
  type = "Fay",
  rho = 0.3,
  data = mcbs_analytic_file,
  combined.weights = TRUE
)
```

Estimate Percent of Medicare Beneficiaries that are Dually-Eligible by Year (Pooled estimate representing the moving average of nationally representative year-specific estimates)

```
prop.table(svytable(~H_OPMDCD, design=mcbs))
```

Estimate Percent of Medicare Beneficiaries that are Dually-Eligible by Year (nationally representative, year-specific estimates)

```
prop.table(svytable(~H_OPMDCD + YEAR, design=mcbs), 2)
```