

**MEPS HC 240:
2022 Food Security**

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A. Data Use Agreement

Individual identifiers have been removed from the microdata contained in these files. Nevertheless, under sections 308 (d) and 903 (c) of the Public Health Service Act (42 U.S.C. 242m and 42 U.S.C. 299 a-1), data collected by the Agency for Healthcare Research and Quality (AHRQ) and/or the National Center for Health Statistics (NCHS) may not be used for any purpose other than for the purpose for which they were supplied; any effort to determine the identity of any reported cases is prohibited by law.

Therefore in accordance with the above referenced Federal Statute, it is understood that:

1. No one is to use the data in this dataset in any way except for statistical reporting and analysis; and
2. If the identity of any person or establishment should be discovered inadvertently, then (a) no use will be made of this knowledge, (b) the Director Office of Management AHRQ will be advised of this incident, (c) the information that would identify any individual or establishment will be safeguarded or destroyed, as requested by AHRQ, and (d) no one else will be informed of the discovered identity; and
3. No one will attempt to link this dataset with individually identifiable records from any datasets other than the Medical Expenditure Panel Survey or the National Health Interview Survey. Furthermore, linkage of the Medical Expenditure Panel Survey and the National Health Interview Survey may not occur outside the AHRQ Data Center, NCHS Research Data Center (RDC) or the U.S. Census RDC network.

By using these data you signify your agreement to comply with the above stated statutorily based requirements with the knowledge that deliberately making a false statement in any matter within the jurisdiction of any department or agency of the Federal Government violates Title 18 part 1 Chapter 47 Section 1001 and is punishable by a fine of up to \$10,000 or up to 5 years in prison.

The Agency for Healthcare Research and Quality requests that users cite AHRQ and the Medical Expenditure Panel Survey as the data source in any publications or research based upon these data.

B. Background

1.0 Household Component

The Medical Expenditure Panel Survey (MEPS) provides nationally representative estimates of health care use, expenditures, sources of payment, and health insurance coverage for the U.S. civilian noninstitutionalized population. The MEPS Household Component (HC) also provides estimates of respondents' health status, demographic and socio-economic characteristics, employment, access to care, and satisfaction with care. Estimates can be produced for individuals, families, and selected population subgroups. The panel design of the survey includes five rounds of interviews covering 2 full calendar years. Additional rounds were added to Panel 24 in 2021 and 2022, covering the third and fourth years respectively, to compensate for the smaller number of completed interviews in later panels. These extra rounds provide data for examining person level changes in selected variables such as expenditures, health insurance coverage, and health status. Information about each household member is collected through computer-assisted personal interviewing (CAPI) technology, and the survey builds on this information from interview to interview. All data for a sampled household are reported by a single household respondent.

The MEPS HC was initiated in 1996. Each year a new panel of sample households is selected. Because the data collected are comparable to those from earlier medical expenditure surveys conducted in 1977 and 1987, it is possible to analyze long-term trends. Historically, each annual MEPS HC sample consists of approximately up to 15,000 households. Data can be analyzed at the person, the family, or the event level. Data must be weighted to produce national estimates.

The set of households selected for each panel of the MEPS HC is a subsample of households participating in the previous year's National Health Interview Survey (NHIS) conducted by the National Center for Health Statistics. The NHIS sampling frame provides a nationally representative sample of the U.S. civilian noninstitutionalized population. In 2006, the NCHS implemented a new sample design for the NHIS, to include households with Asian persons in addition to households with Black and Hispanic persons in the oversampling of minority populations. In 2016, NCHS introduced another sample design that discontinued the oversampling of these minority groups.

2.0 Medical Provider Component

When the household CAPI interview is completed, and permission is obtained from the household survey respondents to contact their medical provider(s), a sample of these providers is contacted by telephone to obtain information that household respondents cannot accurately provide. This part of the MEPS is called the Medical Provider Component (MPC) and it collects information on dates of visits, diagnosis and procedure codes, and charges and payments. The Pharmacy Component (PC), a subcomponent of the MPC, does not collect data on charges or on diagnosis and procedure codes, but it does collect detailed information on drugs, including the National Drug Code (NDC) and medicine name, as well as amounts of payment. The MPC is not

designed to yield national estimates. It is primarily used as an imputation source to supplement/replace household reported expenditure information.

3.0 Survey Management and Data Collection

MEPS HC and MPC data are collected under the authority of the Public Health Service Act. The MEPS HC data are collected under contract with Westat, Inc., and the MEPS MPC data are collected under contract with Research Triangle Institute. Datasets and summary statistics are edited and published in accordance with the confidentiality provisions of the Public Health Service Act and the Privacy Act. The NCHS provides consultation and technical assistance.

As soon as the MEPS data are collected and edited, they are released to the public in stages of microdata files and tables via the [MEPS website](#) and datatools.ahrq.gov.

Additional information on MEPS is available from the MEPS project manager or the MEPS public use data manager at the Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality, 5600 Fishers Lane, Rockville, MD 20857 (301-427-1406).

C. Technical and Programming Information

1.0 General Information

This documentation describes the 2022 Food Security public use file (hereafter referred to as the Food Security PUF) from the MEPS HC. It was released as an ASCII file (with related SAS, SPSS, Stata, and R programming statements and data user information), and as a SAS dataset, a SAS transport dataset, a Stata dataset, and an Excel file. The 2022 Food Security PUF provides information collected on a nationally representative sample of the U.S. civilian noninstitutionalized population for calendar year 2022. The file contains 17 variables and has a logical record length of 58 with an additional 2-byte carriage return/line feed at the end of each record.

This file consists of MEPS survey data obtained in Round 8 of Panel 24, Round 4 of Panel 26, and Round 2 of Panel 27, and contains variables pertaining to food security.

This document offers a brief overview of the types and levels of data provided, the content and structure of the files, and programming information. It contains the following sections:

- Data File Information (Section 2.0)
- Survey Sample Information (Section 3.0)
- Variable-Source Crosswalk (Section D)

Both weighted and unweighted frequencies of most variables included in the 2022 Food Security PUF are provided in the accompanying codebook file. The exceptions to this are weight variables and variance estimation variables. Only unweighted frequencies of these variables are included in the accompanying codebook file. See the Weights Variables list in Section D: “Variable-Source Crosswalk”.

A database of all MEPS products released to date can be found on the [MEPS website](#).

2.0 Data File Information

This Food Security PUF contains variables and frequency distributions associated with 9,848 households who participated in the MEPS HC in 2022. These households received a positive family-level weight and were part of one of the three MEPS panels for whom food security data were collected in Round 8 of Panel 24, Round 4 of Panel 26, or Round 2 of Panel 27.

2.1 Codebook Structure

The codebook and data file list variables in the following order:

- Unique household identifiers and survey administration variables
- Food security variables
- Weight and variance estimation variables

2.2 Reserved Codes

This Food Security PUF contains several reserved code values.

Table 1

Reserved Code Values and Definitions

	Value	Definition
-1	Inapplicable	Question was not asked due to skip pattern
-7	Refused	Question was asked and respondent refused to answer question
-8	Don't Know	Question was asked and respondent did not know answer or the information could not be ascertained
-15	Cannot Be Computed	Value cannot be derived from data

The value Cannot Be Computed (-15) is assigned to MEPS constructed variables when there was not enough information from the instrument to calculate the constructed variables. Not having enough information is often the result of skip patterns in the data or of missing information stemming from the responses Refused (-7) or Don't Know (-8). Note that, in addition to Don't Know, reserved code -8 also includes cases for which the information from the question was not ascertained.

2.3 Codebook Format

This codebook describes an ASCII dataset (although the data are also being provided in a SAS dataset, a SAS transport file, a Stata dataset, and an Excel file) and provides the programming identifiers for each variable.

Table 2**Programming Identifiers for Each Variable in the Food Security PUF**

Identifier	Description
Name	Variable name
Description	Variable descriptor
Format	Number of bytes
Type	Type of data: numeric (indicated by NUM) or character (indicated by CHAR)
Start	Beginning column position of variable in record
End	Ending column position of variable in record

2.4 Variable Naming

In general, the variable names reflect the content of the variable, with an eight-character limitation. Historically, round numbers have been indicated by two numbers following the variable name; the first number representing the round for second panel persons (Panel 26), the second number representing the round for first panel persons (Panel 27). The variable names in this 2022 file have not been renamed from prior years, despite the addition of Round 8 of Panel 24, and the round number (8) is not included in the variable names.

Variables contained in this PUF were derived from the CAPI. The source of each variable is identified in Section D: “Variable-Source Crosswalk” in one of three ways:

1. Variables derived from CAPI or assigned in sampling are indicated as “CAPI derived” or “Assigned in sampling”;
2. Variables collected at one or more specific questions have those questionnaire sections and question numbers indicated in the “Source” column; and
3. Variables constructed from multiple questions by using complex algorithms are labeled “Constructed” in the “Source” column.

2.5 File Contents**2.5.1 Survey Administration Variables (HOMEIDX - RULETR42)**

HOMEIDX uniquely identifies each household in the PUF and consists of the Dwelling Unit ID (DUID) followed by the Reporting Unit (RU) letter and round number.

The definitions of Dwelling Units (DUs) in the MEPS Household Survey are generally consistent with the definitions employed for the NHIS. The DUID is a 7-digit number consisting

of a 2-digit panel number followed by a 5-digit random number assigned after the case was sampled for MEPS.

PANEL is a constructed variable used to specify the panel number for the person. PANEL will indicate Panel 24, Panel 26, or Panel 27 for each person in the PUF. Panel 24 is the panel that started in 2019, Panel 26 is the panel that started in 2021, and Panel 27 is the panel that started in 2022.

An RU is a person or group of persons in the sampled DU who are related by blood, marriage, adoption, or other family association. Each RU was interviewed as a single entity for MEPS. Thus, the RU serves chiefly as a family-based “survey” operations unit rather than an analytic unit. Members of each RU within the DU in Round 8, Round 4, or Round 2 are identified in the variable RULETR42.

Households are eligible for the Food Security PUF if the MEPS interview was completed by an RU member and if the household is not a student RU.

2.5.2 Food Security Variables (FSOUT42 - FSNEY42)

Respondents were asked:

- FSOUT42 - How often in the last 30 days anyone in the household worried whether food would run out before getting money to buy more
- FSLAST42 - How often in the last 30 days the food purchased didn't last and the person/household didn't have money to get more
- FSAFRD42 - How often in the last 30 days the person/household could not afford to eat balanced meals
- FSSKIP42 - In the last 30 days did the person/household reduce or skip meals because there wasn't enough money for food (coded as Inapplicable [-1] when FSOUT42, FSLAST42, and FSAFRD42 = 3, -7, -8, or -15)
- FSSKDY42 - How many meals were skipped in the last 30 days (coded as Inapplicable [-1] when FSSKIP42 = 2, -7, -8, or -15 OR when FSOUT42, FSLAST42, and FSAFRD42 = 3, -7, -8, or -15)
- FSLESS42 - In the last 30 days did the person/household ever eat less because there wasn't enough money for food (coded as Inapplicable [-1] when FSOUT42, FSLAST42, and FSAFRD42 = 3, -7, -8, or -15)
- FSHGRY42 - In the last 30 days was the person/household ever hungry but didn't eat because there wasn't enough money for food (coded as Inapplicable [-1] when FSOUT42, FSLAST42, and FSAFRD42 = 3, -7, -8, or -15)

- FSWTLS42 - In the last 30 days did anyone in the household lose weight because there wasn't enough money for food (coded as Inapplicable [-1] when FSOUT42, FSLAST42, and FSAFRD42 = 3, -7, -8, or -15)
- FSNEAT42 - In the last 30 days did anyone in the household not eat for a whole day because there wasn't enough money for food (coded as Inapplicable [-1] when FSOUT42, FSLAST42, and FSAFRD42 = 3, -7, -8, or -15; or when FSLESS42, FSHGRY42, and FSWTLS42 = 2, -7, -8, or -15)
- FSNEDY42 - How many days in the last 30 days anyone in the household had not eaten for a whole day because there wasn't enough money for food (coded as Inapplicable [-1] when FSOUT42, FSLAST42, and FSAFRD42 = 3, -7, -8, or -15; or when FSLESS42, FSHGRY42, and FSWTLS42 = 2, -7, -8, or -15; or when FSNEAT42 = 2, -7, -8, or -15)

2.6 Linking to Other Files

2.6.1 MEPS Public Use Files

This Food Security PUF can be linked to the 2022 Full Year Consolidated Public Use File (hereafter referred to as the Consolidated PUF) by DUID and RULETR42 to obtain additional data for the families included in this PUF. The reference person of the RU can be identified in the Consolidated PUF by the variable REFPRS42.

2.6.2 National Health Interview Survey

The set of households selected for MEPS is a subsample of those participating in the NHIS, thus, each MEPS panel can also be linked back to the previous year's NHIS public use data files. For information on obtaining MEPS/NHIS link files please see the [AHRQ website](#).

2.6.3 Longitudinal Analysis

Panel-specific longitudinal files are available for downloading in the [data section of the MEPS website](#). For all three panels (Panel 24, Panel 26, and Panel 27), the longitudinal file comprises MEPS data obtained in all rounds of the panel and can be used to analyze changes over the entire length of the panel. Variables in the file pertaining to survey administration, demographics, employment, health status, disability days, quality of care, patient satisfaction, health insurance, and medical care use and expenditures were obtained from the MEPS Consolidated PUFs from the years covered by each panel.

For more details or to download the data files, please see Longitudinal Weight Files at the [AHRQ website](#).

3.0 Survey Sample Information

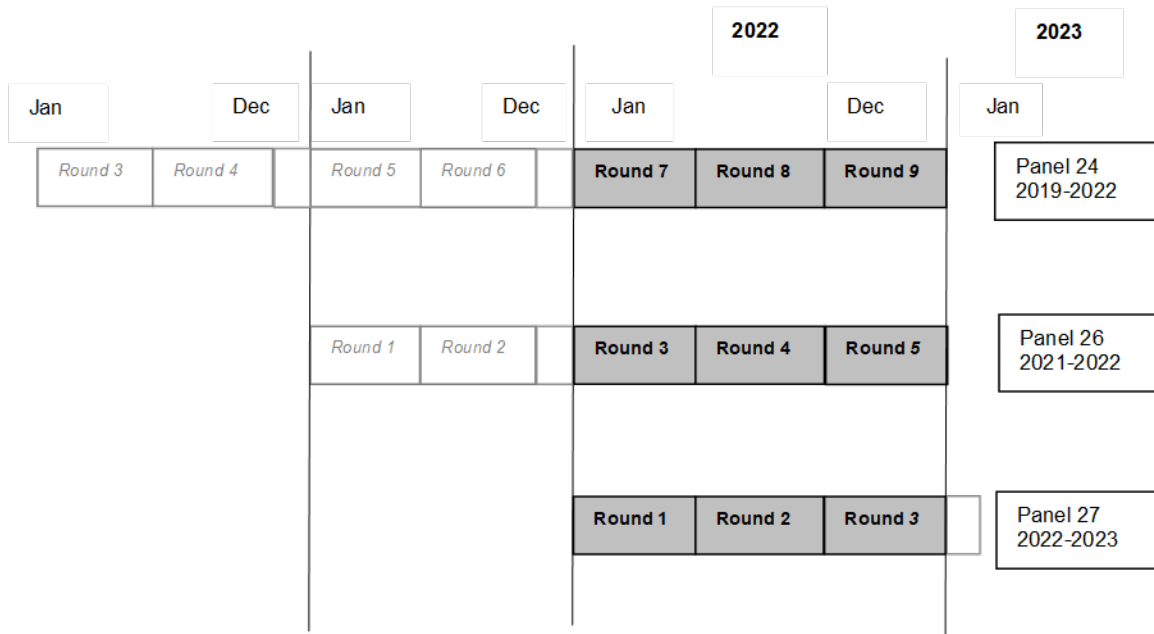
3.1 Background on Sample Design and Response Rates

The MEPS is designed to produce estimates at the national and regional level over time for the U.S. civilian noninstitutionalized population and some subpopulations of interest. The data in this public use file pertain to calendar year 2022.

As usual, Round 3 for a MEPS panel (this time for Panel 26) has been designed to overlap 2 calendar years, as illustrated in the chart below. However it is worth noting that, with the fielding of a third panel in 2022 (as discussed in Section 3.1.2), the structure of other rounds has changed. Round 7 of Panel 24 was fielded in 2021 and designed to collect data for the remainder of 2021 as well as the period of time from January 1, 2022, through the date of the Round 7 interview. Round 3 of Panel 26 was designed for the same purpose, collecting data associated with both 2021 and 2022. This was done to permit both panels to provide data for the FY 2022 MEPS datasets as well as those for FY 2021.

For 2022, Panel 24 Round 8 represents the reference period from the date of the Round 8 interview back to January 1, 2022. The 2022 food security data were collected only in Round 8 of Panel 24, Round 4 of Panel 26, and Round 2 of Panel 27.

Modifications to the MEPS sample design in 2020 and 2021 because of the COVID-19 pandemic continued into 2022 in two forms. First, AHRQ decided to collect data for Panel 24 for nine rounds so that this panel ultimately contributes to MEPS estimates for 4 calendar years. In so doing, the number of respondents to the MEPS is kept at a relatively high level despite potential decline in response rates resulting from the pandemic. Thus, the data in this PUF were collected in Rounds 1, 2, and 3 for Panel 27, Rounds 3, 4, and 5 for Panel 26, and Rounds 7, 8, and 9 for MEPS Panel 24. (Note that Round 3 for a MEPS panel is designed to overlap two calendar years, as illustrated below.)



Second, given the issues in the NHIS discussed below in Section 3.1.1, the MEPS Panel 26 sample was selected from responding households in all four NHIS Panels in Quarter 1 of 2020 and from NHIS Panels 1 and 3 of Quarter 3 of 2020, as opposed to the usual NHIS Panels 1 and 3 of Quarters 1, 2, and 3. As an adjunct to this modification, AHRQ also took advantage of and oversampled from the additional primary sampling units (PSUs, i.e., sampled localities) available from NHIS Panels 2 and 4 and appearing in the MEPS sample for the first time. State-level estimation is of interest to MEPS users, and the added PSUs would increase the precision of these estimates. The estimates that would be expected to benefit the most from the added PSUs were for the “middle-sized” states. The largest states already had large samples, while precision for the smallest states would remain low.

A sample design feature shared by both Panel 24 and Panel 27 involves the partitioning of the sample domain “Other” (serving as the catchall stratum and consisting mainly of households with “White” members) into two sample domains. This was done for the first time in Panel 16. The two domains distinguished between households characterized as “complete” respondents to the NHIS and those characterized as “partial completes.” Starting with Panel 25, the “Other, Partial” domain includes NHIS households that have provided only a roster of household members. NHIS partial completes typically have a lower response rate to MEPS, and for both MEPS panels, the partial domain was sampled at a lower rate than the complete domain. This approach has reduced survey costs because the partials tend to have higher costs in gaining survey participation, but it has also increased sample variability stemming from the resulting increased variability in sampling rates. For detailed information on the MEPS sample design, see Chowdhury, et al. (2019). This feature was not particularly emphasized in Panel 26 because of the oversampling of “middle-sized” states discussed in the paragraph above.

3.1.1 MEPS-Links to the National Health Interview Survey

Each responding household in the 2022 MEPS dataset is associated with one of the three separate and overlapping MEPS panels, Panel 24, Panel 26, and Panel 27. These panels consist of subsamples of households that participated in the 2018, 2020, and 2021 NHIS, respectively. The full-year 2018 Population Characteristics PUF was the first one in which both MEPS panels reflect the new NHIS sample design first implemented in 2016.

Whenever there is a change in sample or study design, it is good survey practice to assess whether such a change could affect the sample estimates. For example, increased coverage of the target populations with an updated sample design based on data from the latest Census can improve the accuracy of the sample estimates. MEPS estimates have been and will continue to be evaluated to determine whether an important change in the survey estimates might be associated with a change in design. Background on the two NHIS sample redesigns of interest here is discussed directly below, followed by a discussion of potential effects on MEPS estimates stemming from data quality concerns of the NHIS during the pandemic.

Background on the NHIS Sample Redesign Implemented in 2016

Beginning in 2016, NCHS implemented another new sample design for the NHIS, which differed substantially from the prior design. Each of the 50 states as well as the District of Columbia served as explicit strata for sample selection purposes with the intent of providing the capability of state-level NHIS estimates obtained through pooling across years if the sample size for a single year would result in unreliable estimates. In contrast to the previous design, households in areas with relatively high concentrations of minorities were not oversampled. PSUs are still formed at the county level. However, within the sampled PSUs, the clusters of addresses that have been sampled for each year of the NHIS are not in the form of segments (consisting of one or more Census blocks) as they were in the previous NHIS designs. For the 2016 NHIS, each such cluster consisted of roughly 25 subclusters selected using random systematic sampling across the full geography of the PSU. Each subcluster is made up of, generally, 4 nearby addresses or roughly 100 addresses in all. The number of subclusters per cluster can vary from year to year.

Another major change is that the list of DUs (addresses) was obtained from the Computerized Delivery Sequence File (CDSF) of the U.S. Postal Service, and its approach differs from the standard listing process for area probability samples used in the pre-2016 designs. While addresses in the CDSF provide very high coverage of most areas of the country, coverage in rural areas can be somewhat lower. For rural areas in which this was a concern, address lists were created through the conventional listing process. NCHS describes [the NHIS sample design](#) on the NHIS website.

Panel 24 Household Sample Size

A subsample of 9,700 households was randomly selected for Panel 24 from the households responding to the 2018 NHIS, of which 9,684 were fielded for MEPS after the elimination of any units characterized as ineligible for fielding.

Panel 26 Household Sample Size

A subsample of 9,510 households was randomly selected for Panel 26 from the households responding to the 2020 NHIS, of which all 9,510 were fielded for MEPS after the elimination of any units characterized as ineligible for fielding.

Panel 27 Household Sample Size

A subsample of 9,700 households was randomly selected for Panel 27 from the households responding to the 2021 NHIS, of which 9,694 were fielded for MEPS after the elimination of any units characterized as ineligible for fielding.

Implications of the New Design on MEPS Estimates

Under the new design, the MEPS sampled households reflect the clustering of the NHIS as described above but to a somewhat lesser degree because of the sampling from NHIS respondents. Because the NHIS sample is spread in small subclusters across the PSU, and because the sampling is limited to NHIS respondents only, the impact of clustering on the variance of MEPS estimates may be more limited. Also, in contrast to the previous design, the NHIS sampling rates at the address level currently do not vary as a function of the oversampling of minorities (although this could change in subsequent years). On balance, the overall variation in sampling rates/weights at the national level for the NHIS is expected to be lower, with a corresponding positive impact on the precision of MEPS estimates. However, with a reduction in the sample sizes of minority households, the precision levels of MEPS estimates for Hispanics, Blacks, and Asians may be reduced to some extent.

Impact on the MEPS Sample Associated with Data Quality Concerns for the 2020 NHIS

Households fielded for Round 1 of the MEPS in each year have been selected as a subsample from among the NHIS responding households from the prior year (e.g., Panel 25 of the MEPS was selected from NHIS respondents in 2019). It is important to note here that the NHIS households eligible for use in the MEPS are restricted to NHIS Panels 1 and 3 of the first three quarters of the NHIS, as the fourth-quarter households cannot be made available in time for the MEPS data collection early in the next calendar year, and households in NHIS Panels 2 and 4 of each quarter are reserved by NCHS for other use.

The onset of the pandemic at a national level took place in mid-March of 2020, when the NHIS data collection for Quarter 1 of 2020 was virtually completed and that of Quarter 2 was about to begin. The NHIS rapidly shifted from in-person to telephone interviewing in an attempt to gather data from Quarter 2 of 2020. While NCHS was able to make this transition, the agency's assessments at the time showed a much lower response rate than is typically seen during Quarter 2 and the quality of the Quarter 2 data was of particular concern. NCHS thus modified the 2020 NHIS sample design for Quarters 3 and 4. A randomly selected subset of the sampled housing units originally selected for fielding in Quarters 3 and 4 of 2020 was removed from the sample to be fielded. The reduced sample for Quarters 3 and 4 was then enhanced by randomly selecting responding households from the 2019 NHIS for re-interviewing in 2020.

Given the issues and modification of the 2020 NHIS, two key factors were expected to raise concerns for the MEPS plans for fielding a 2021 sample. First, 2020 NHIS data quality and sample size issues were of particular concern for Quarter 2 of that year. Second, roughly half of the NHIS sampled households for Quarter 3 would also have been respondents in the 2019 NHIS, so many of the Quarter 3 NHIS respondents were expected to have already been sampled and fielded for Panel 25 of the MEPS. It thus became clear that the 2021 sample design for Panel 26 of the MEPS would need to be modified.

AHRQ proposed, and NCHS approved, for responding households in NHIS Panels 2 and 4 from Quarter 1 of 2020 to be made available for the MEPS Panel 26 sample selection. Virtually all of these households were interviewed in person before the major onset of the pandemic, so the Quarter 1 response rates for all four NHIS panels were consistent with prior years, and the data quality issues associated with the pandemic could be avoided. Thus, for MEPS Panel 26, the NHIS responding households subsampled for the MEPS were selected from among all NHIS responding households in Quarter 1 and from those responding in Quarter 3 that were not originally sampled for the 2019 NHIS.

3.1.2 Discussion of Pandemic Effects on Quality of MEPS Data

The challenges associated with MEPS data collection in 2020 after the onset of the COVID-19 pandemic continued through 2021 and possibly into 2022. The major modifications to the standard MEPS study design remained in effect, permitting data to be collected safely but with accompanying concerns related to the quality of the data obtained. The suggestion made in the documentation for the FY 2020 and FY2021 MEPS Consolidated PUF data still holds. Researchers are counseled to take care in the interpretation of estimates based on data collected from these three calendar years. This includes the comparison of such estimates to those of other years and corresponding trend analyses.

Section 3.1 of the documentation for the [2020 Consolidated PUF](#) provides a general discussion of the impact of the COVID-19 pandemic on several other major in-person federal surveys as well as on MEPS. In addition, it offers a detailed look at how MEPS was modified to permit safe data collection and the development of useful estimates at a time when the way the U.S. health care system functioned underwent many transformations to meet population needs. Three sources of potential bias were identified for MEPS for FY 2020: (1) long recall period for Round 6 of Panel 23, (2) switching from in-person to telephone interviewing which likely had a larger impact on Panel 25, and (3) the impact of CPS bias on the MEPS weights. A number of statistically significant differences were found between panels for FY 2020. Those findings are discussed in MEPS HC 224.

Concerns of potential bias for FY 2021 and between panel differences are discussed in Section 3.1 of the documentation for the 2021 Consolidated PUF. Additional analysis has also uncovered a concerning trend on event reporting in MEPS following the COVID-19 pandemic. While reporting of other event types has rebounded from the dip experienced in 2020, inpatient (IP) and emergency room (ER) utilization reports collected in FY 2021 did not rebound as much as key benchmarks, even though these are the most salient event types. Modifications made to the

MEPS sample design discussed in the 2022 Population Characteristics PUF may have partially contributed to the concerning trend.

Concerns for potential bias for FY 2022 include:

- The impact of the pandemic on NHIS data collection and the resulting Panel 26 MEPS sample (Section 3.1.1 of the 2022 Population Characteristics PUF). NHIS response rates in the pandemic and shifts in the resulting MEPS sample may have increased the likelihood that the MEPS Panel 26 respondents differed in composition compared to previous years.
- The extension of panels (beginning of Section 3.1 of the 2022 Population Characteristics PUF). While there is a benefit in boosting the MEPS sample size by keeping pre-pandemic panels active for an additional two years to counter reduced response rates, there are two risks with this approach: attrition in these panels beyond what is experienced in two years, which may lead households with more serious health issues to leave MEPS, and a conditioning effect whereby respondents learn over time that reporting events results in a longer interview.
- Significantly lower response rates (Section 3.2 of the 2022 Population Characteristics PUF) that could differentially exclude households more likely to experience IP stays. The demographic shifts on MEPS between 2019 and 2021 suggest a more educated, higher-income, older MEPS.

Preliminary analyses undertaken to examine the quality of the MEPS FY 2022 data compared health care utilization for the MEPS target population between the panels fielded. These comparisons were undertaken for the full sample and the three age groups of 0-17, 18-64, and 65+.

These comparisons found no major differences in IP or ER visits between the three panels. Slight differences were observed in dental visits and outpatient visits. For dental visits, Panel 26 reported at a higher rate than Panel 24 or Panel 27 in the age range 18-64. For outpatient visits, Panel 24 reported at a lower rate than Panel 26 and Panel 27 in the age range 18-64.

In summary, the weights developed for the MEPS FY 2022 data can be expected to produce useful estimates for initial analyses. Further analyses of MEPS estimates will be conducted as part of the production of the FY 2022 Consolidated PUF to be released later in 2024. This will help identify any additional data quality issues as well as possible improvements that could be implemented.

The various actions taken in the development of the person-level weights for the MEPS FY 2022 data were designed to limit the potential for bias in the data due to changes in data collection and response bias. However, evaluations of MEPS data quality in 2021 and 2022 suggest that users of the MEPS FY 2022 PUFs should continue to exercise caution when interpreting estimates and assessing analyses based on these data, as well as in comparing 2022 estimates to those of prior years.

3.1.3 Sample Weights and Variance Estimation

Weight variables in the 2022 Population Characteristics PUF can be used to generate estimates of totals, means, percentages, and rates for families in the U.S. civilian noninstitutionalized population. Procedures and considerations associated with the construction and interpretation of family-level estimates using these and other variables are discussed in this section. It should be noted that NCHS has made a modification to the NHIS sample design that has affected the MEPS variance structure. This is discussed in more detail in Section 3.4.1.

3.2 The MEPS Sampling Process and Response Rates: An Overview

For most MEPS panels, a sample representing about three-eighths of the NHIS responding households is made available. This was the case for MEPS Panel 24, Panel 26, and Panel 27.

Because the MEPS subsampling has to be done soon after NHIS responding households are identified, a small percentage of the NHIS households initially characterized as NHIS respondents are later classified as nonrespondents for the purposes of NHIS data analysis. This adjustment actually increases the overall MEPS response rate slightly since the percentage of NHIS households designated for use in the MEPS (all those characterized initially as respondents from the NHIS panels and quarters used by the MEPS for a given year) is slightly larger than the final NHIS household-level response rate, and some NHIS nonresponding households do participate in the MEPS. However, as a result, these NHIS nonrespondents who are MEPS participants have no NHIS data that can be linked with MEPS data. Once the MEPS sample is selected from among the NHIS households characterized as NHIS respondents, RUs consisting entirely of military personnel are deleted from the sample. Military personnel not living in the same RU as civilians are ineligible for the MEPS. After these exclusions, all RUs associated with households selected from among those identified as NHIS responding households are then fielded in the first round of the MEPS.

Table 3 shows in Rows A, B, and C the three informational components just discussed. Row A indicates the percentage of NHIS households eligible for the MEPS. Row B indicates the number of NHIS households sampled for the MEPS. Row C indicates the number of sampled households actually fielded for the MEPS (after the military members discussed above were dropped and a small number of NHIS households were sampled in error). Note that all response rates discussed here are unweighted.

Table 3

Sample Size and Unweighted Response Rates for 2022 Full Year File (Panel 27 Rounds 1-3/Panel 26 Rounds 3-5/Panel 24 Rounds 7-9)

Components	Panel 24	Panel 26	Panel 27	2022 Combined
A. Percentage of NHIS households designated for use in MEPS (those initially characterized as responding) *	64.3%	60.6%	59.4%	-

Components	Panel 24	Panel 26	Panel 27	2022 Combined
B. Number of households sampled from the NHIS	9,700	9,510	9,700	-
C. Number of Households sampled from the NHIS and fielded for MEPS	9,684	9,510	9,694	-
D. Round 1 - Number of RUs eligible for interviewing	10,090	9,795	10,007	-
E. Round 1 - Number of RUs with completed interviews	7,186	5,882	6,158	-
F. Round 2 - Number of RUs eligible for interviewing	7,323	6,045	6,285	-
G. Round 2 - Number of RUs with completed interviews	6,777	4,799	5,368	-
H. Round 3 - Number of RUs eligible for interviewing	6,890	4,876	5,429	-
I. Round 3 - Number of RUs with completed interviews	6,289	4,103	4,818	-
J. Round 4 - Number of RUs eligible for interviewing	6,371	4,159	-	-
K. Round 4 - Number of RUs with completed interviews	5,446	3,805	-	-
L. Round 5 - Number of RUs eligible for interviewing	5,495	3,809	-	-
M. Round 5 - Number of RUs with completed interviews	4,770	3,541	-	-
N. Round 6 - Number of RUs eligible for interviewing	4,808	-	-	-
O. Round 6 - Number of RUs with completed interviews	3,959	-	-	-
P. Round 7 - Number of RUs eligible for interviewing	4,002	-	-	-
Q. Round 7 - Number of RUs with completed interviews	3,500	-	-	-
R. Round 8 - Number of RUs eligible for interviewing	3,519	-	-	-
S. Round 8 - Number of RUs with completed interviews	3,121	-	-	-
T. Round 9 - Number of RUs eligible for interviewing	3,156	-	-	-

Components	Panel 24	Panel 26	Panel 27	2022 Combined
U. Round 9 - Number of RUs with completed interviews	3,015	-	-	-
Overall annual unweighted response rates				
P26: A x (E/D) x (G/F) x (I/H)				
P25: A x (E/D) x (G/F) x (I/H) x (K/J) x (M/L)	17.5%	20.7%	27.7%	
P24: A x (E/D) x (G/F) x (I/H) x (K/J) x (M/L) x (O/N) x (Q/P)	(Panel 24 through Round 9)	(Panel 26 through Round 5)	(Panel 27 through Round 3)	23.4%
Combined: $0.22 \times P24 + 0.29 \times P26 + 0.49 \times P27$				

*Among the panels and quarters of the NHIS allocated to MEPS, the percentage of households that were considered to be NHIS respondents at the time the MEPS sample was selected.

3.2.1 Response Rates

To produce annual health care estimates for calendar year 2022 based on the full MEPS sample, data from the Panel 24, Panel 26, and Panel 27 were combined. More specifically, full calendar year 2022 data collected in Rounds 7-9 for Panel 24 and Rounds 3-5 for the Panel 26 sample were pooled with data from the first three rounds of data collection for the Panel 27 sample (the general approach is described below).

As mentioned above, all response rates discussed in this section are unweighted. To understand how the MEPS response rates were calculated, some features related to data collection should be noted. When an RU is visited for a round of data collection, changes in RU membership are identified. Such changes include the formation of student RUs as well as other new RUs created when RU members from a previous round have moved to another location in the United States. Thus, the number of RUs eligible for an interview in a given round is determined after data collection is fully completed. The ratio of the number of RUs completing the interview in a given round to the number of RUs characterized as eligible to complete the interview for that round represents the “conditional” response rate for that round expressed as a proportion. It is “conditional” in that it pertains to the set of RUs characterized as eligible for the MEPS in that round and is thus “conditioned” on prior participation rather than on representing the overall response rate through that round. For example, in Table 3, for Panel 27 Round 2 the ratio of 5,368 (Row G) to 6,285 (Row F) multiplied by 100 represents the response rate for the round (85.4 percent when computed), conditioned on the set of RUs characterized as eligible for MEPS for that round. Taking the product of the percentage of the NHIS sample eligible for MEPS (Row A) with the product of the ratios for a consecutive set of MEPS rounds beginning with Round 1 produces the overall response rate through the last MEPS round specified.

The overall unweighted response rate for 2022 for the combined sample after pooling the respondents across the three panels was obtained by computing the product of the compositing factor associated with each panel and the corresponding overall panel response rate and then summing the three products. Panel 27 represents about 48.8 percent of the combined sample size,

Panel 26 represents about 29.3 percent, and Panel 24 represents the remaining 21.9 percent. Thus, the combined response rate of 23.4 percent was computed as 0.22 times 17.5 (17.5 is the overall Panel 24 response rate through Round 9) plus 0.29 times 20.7 (20.7 is the overall Panel 26 response rate through Round 5) plus 0.49 times 27.7 (27.7 is the overall Panel 27 response rate through Round 3.)

3.2.2 Panel 27 Response Rates

For Panel 27 Round 1, 9,694 households were fielded in 2022 (Row C of Table 3), which is a randomly selected subsample of the households responding to the 2021 NHIS.

Table 3 shows the number of RUs eligible for interviewing in each round of Panel 27 as well as the number of RUs completing the interview. Computing the individual round “conditional” response rates as described in Section 3.2.1 and then taking the product of these three response rates and the factor 59.4 (the percentage of the NHIS sampled households characterized as responding when the household sample was selected for the MEPS) yields an overall response rate of 27.7 percent for Panel 27 through Round 3.

3.2.3 Panel 26 Response Rates

A total of 9,510 households were fielded in 2021 for MEPS Panel 26 (Row C of Table 3), a randomly selected subsample of the households responding to the 2020 NHIS.

Table 3 shows the number of RUs eligible for interviewing and the number completing the interview for all five rounds of Panel 26. The overall response rate for Panel 26 was computed in a similar fashion to that of Panel 27 but it covered all five rounds of interviewing as well as the factor representing the percentage of NHIS sampled households eligible for the MEPS. The overall response rate for Panel 26 through Round 5 is 20.7 percent.

3.2.4 Panel 24 Response Rates

A total of 9,684 households were fielded in 2019 for MEPS Panel 24 (Row C of Table 3), a randomly selected subsample of the households responding to the 2018 NHIS.

Table 3 shows the number of RUs eligible for interviewing and the number completing the interview for all nine rounds of Panel 24. The overall response rate for Panel 24 was computed in a similar fashion to that of Panel 26 but it covered all nine rounds of MEPS interviewing as well as the factor representing the percentage of NHIS sampled households eligible for the MEPS. The overall response rate for Panel 24 through Round 9 is 17.5 percent.

3.2.5 Annual (Combined Panel) Response Rate

A combined panel response rate for this dataset was obtained by taking a weighted average of the panel-specific response rates. The Panel 24 response rate was weighted by a factor of 0.22, the

Panel 26 response rate was weighted by a factor of 0.29, and the Panel 27 response rate was weighted by a factor of 0.49, reflecting approximately the distribution of the overall sample across the three panels. The resulting combined response rate for the combined panels was computed as $(0.22 \times 17.2) + (0.29 \times 20.7) + (0.49 \times 20.7)$ or 23.4 percent (as shown in Table 3).

3.2.6 Oversampling

Oversampling is a feature of the MEPS sample design that helps to increase the precision of estimates for some subgroups of interest. This section discusses the concept of oversampling and how it related to the MEPS.

For a sample in which all persons in a population are selected with the same probability and survey coverage of the population is high, the sample distribution is expected to be proportionate to the population distribution. For example, if Hispanics represent 15 percent of the general population, one would expect roughly 15 percent of the persons sampled to be Hispanic. However, in order to improve the precision of estimates for specific subgroups of a population, one might decide to select samples from those subgroups at higher rates than the remainder of the population. Thus, one might select Hispanics at twice the rate (i.e., at double the probability) of persons not oversampled. As a result, an oversampled subgroup comprises a higher proportion of the sample than it represents in the general population. Sample weights ensure that population estimates are not distorted by a disproportionate contribution from oversampled subgroups. Base sample weights for oversampled groups will be smaller than for the portion of the population not oversampled. For example, if a subgroup is sampled at roughly twice the rate of sample selection for the remainder of the population not oversampled, members of the oversampled subgroup will receive base or initial sample weights (before nonresponse or poststratification adjustments) that are roughly half the size of the group not oversampled.

As mentioned above, oversampling is implemented to increase the sample sizes and thus improve the precision of survey estimates for particular subgroups of the population. The “cost” of oversampling is that the precision of estimates for the general population and subgroups not oversampled will be reduced to some extent compared with the precision one could have achieved if the same overall sample size were selected without any oversampling.

The NHIS no longer oversamples households with members who are Hispanic, Black, or Asian. Nevertheless, these minority groups are still of analytic interest for the MEPS. As a result, for Panels 24 and 27, all households in the Asian, Hispanic, and Black domains were sampled with certainty (i.e., all households assigned to those domains were included in the MEPS). For Panel 24, the corresponding sampling rates for the Other, complete domain and the Other, partial complete domain were about 79 percent and 50 percent, respectively. For Panel 27, the corresponding sampling rates for the Other, complete domain and the Other, partial complete domain were a little over 80 percent and slightly under 80 percent, respectively.

Within the “noncertainty” strata (the “Other” domains) for both Panel 24 and Panel 27 , responding NHIS households were selected for the MEPS using a systematic sample selection procedure from among the eligible households. Households were selected with probability proportionate to size (pps), where the size measure was the inverse of the NHIS initial

probability of selection. The purpose of pps sampling was to help reduce the variability in the MEPS weights incurred as a result of the variability of the NHIS sampling rates.

As discussed in Section 3.1, the Panel 26 sample focused on oversampling the “middle-sized” states rather than Hispanics, Blacks, or Asians.

A note with respect to the interpretation of MEPS response rates, which are unweighted. Sample allocations across sample domains typically change from one MEPS panel to another. The sample domains used may also vary by panel, as is the case for Panel 26 versus Panel 24 and Panel 27. When one compares unweighted measures (e.g., response rates) between panels and years, one should take into account such differences. Suppose, for example, that members of one domain have a lower propensity to respond than those of another domain. If the former domain has been allocated a higher proportion of the sample, the corresponding panel may have a lower unweighted response rate simply because of the differences in sample allocation.

3.3 Food Security Weight (FSWT42)

3.3.1 Background and Target Population

The Food Security questions are designed to learn more about existing food concerns among families in the U.S. These questions are incorporated into the MEPS survey instrument in the second round of data collection for each panel in a calendar year. Thus, for calendar year 2022, this took place in Round 8 of Panel 24, Round 4 of Panel 26, and Round 2 of Panel 27. To ensure that data reflected family circumstances as accurately as possible, data were collected from a member of the RU. For virtually all MEPS interviews, this was the RU respondent. However, a relative handful of MEPS interviews are conducted with proxy respondents. As a result, food security data were not collected for such RUs, and they are not part of the target population for the Food Security weights. It may be noted that such families can be expected to be somewhat different from families generally. For example, a proxy respondent may be called for if his or her elderly parent was too sick to respond or had entered a nursing home.

Some RUs for which Food Security data were obtained may have gone out of scope prior to the end of 2022 while others may have become MEPS nonrespondents. As a result, the MEPS family weights established to reflect MEPS families in 2022 and appearing on the FY 2022 Consolidated PUF do not pertain to the target population associated with the Food Security weights. The Food Security weights were thus established with this in mind. The target population for the Food Security questions in 2022 can be described as MEPS families in the fall of 2022 who did not require a proxy respondent. As a reminder, single person RUs are considered a MEPS family as are partners who, though unrelated by marriage, consider themselves as a single family unit.

3.3.2 Development of the Food Security Weights

The weights for the 2022 Food Security data were established utilizing the MEPS family weights created for the FY 2022 Consolidated PUF which already compensated for MEPS nonresponse

at the family level across MEPS rounds. To reflect such nonresponse for the Food Security weights, the initial Food Security weight assigned to an RU (MEPS family) was that of the weight of the corresponding MEPS family at the end of 2022, as established through the weighting of families for the FY 2022 Consolidated PUF. Specifically, these weights were assigned to each responding RU at Rounds 8/4/2 of Panels 24/26/27 where an RU member completed the MEPS interview. Those MEPS families that responded in Rounds 8/4/2 but were a nonresponding RU at Round 9/5/3 would thus not receive a Food Security weight as they would not have received a MEPS family weight.

Proxy respondents at Rounds 8/4/2 were then removed from further consideration in the weighting process. About 0.7 percent of the MEPS family population at Rounds 8/4/2 had their MEPS data reported by proxy respondents.

Fewer than 20 RU respondents of the families otherwise eligible for the Food Security weights at Rounds 8/4/2 did not answer at least three of the 10 Food Security questions. These were treated as Food Security nonrespondents and a global adjustment factor was assigned to the weights of the respondents of the Food Security questions to determine the final value of the weight variable FSWT42, the 2022 Food Security weight appearing on the 2022 Food Security PUF.

For information on the derivation of FAMWT22F, the weight variable representing the MEPS family population appearing on the 2022 Full Year Consolidated PUF, see MEPS HC 243, the corresponding PUF Documentation. Table 4 shows the number of families in the Food Security data file by panel and the weighted total number of the families.

Table 4

Numbers of families by Panel and the weighted total number of families

Panel 24	Panel 26	Panel 27	Combined	Population estimate (weighted total of combined sample)
2,585	3,090	4,173	9,848	139,711,314

3.4 Variance Estimation

To obtain estimates of variability in the MEPS estimates (such as the standard error of sample estimates or corresponding confidence intervals), analysts should take into account the complex sample design of the MEPS for both person-level and family-level analyses. Several methodologies have been developed for estimating standard errors for surveys with a complex sample design, including the Taylor-series linearization method, balanced repeated replication (BRR), and jackknife replication. Various software packages provide analysts with the capability of implementing these methodologies. MEPS analysts most commonly use the Taylor-series approach. Although this PUF does not contain replicate weights, analysts can use the BRR methodology to construct replicate weights to develop variances for more complex estimators (see Section 3.4.2: Balanced Repeated Replicaton).

3.4.1 Taylor-series Linearization Method

The variables needed to calculate appropriate standard errors based on the Taylor-series linearization method are included on this file as well as all other MEPS PUFs. Software packages that permit the use of the Taylor-series linearization method include SUDAAN, R, Stata, SAS (version 8.2 and higher), and SPSS (version 12.0 and higher). For complete information on the capabilities of a package, analysts should refer to the user documentation for the software.

With the Taylor-series linearization method, variance estimation strata and the variance estimation PSUs within these strata must be specified. The variables VARSTR and VARPSU on this PUF identify the sampling strata and primary sampling units required by the variance estimation programs. Specifying a “with replacement” design in one of the previously mentioned software packages will provide estimated standard errors appropriate for assessing the variability of the MEPS estimates. It should be noted that the number of degrees of freedom associated with estimates of variability indicated by such a package may not appropriately reflect the number available. For variables of interest distributed throughout the country (and thus the MEPS sample PSUs), one can generally expect to see at least 100 degrees of freedom associated with the estimated standard errors for national estimates based on this MEPS database.

Before 2002, the MEPS variance strata and PSUs were developed independently from year to year, and the last two characters of the strata and PSU variable names denoted the year. Beginning with the 2002 Point-in-Time PUF, the approach changed with the intention that variance strata and PSUs would be developed to be compatible with all future PUFs until the NHIS design changed. Thus, when pooling data across years 2002 through the Panel 11 of the 2007 files, analysts can use the variance strata and PSU variables provided without modifying them for variance estimation purposes for estimates covering multiple years of data. There are 203 variance estimation strata, each stratum with either two or three variance estimation PSUs.

Beginning in Panel 12 of the 2007 files, a new set of variance strata and PSUs were developed because of the introduction of a new NHIS design. There are 165 variance strata with either two or three variance estimation PSUs per stratum. Therefore, there are a total of 368 (203+165) variance strata in the 2007 Population Characteristics PUF, as it consisted of two panels that were selected under two independent NHIS sample designs. Since both MEPS panels in the full-year files from 2008 through 2016 are based on the same NHIS design, there are only 165 variance strata. These strata (VARSTR values) have been numbered from 1001 to 1165 so that they can be readily distinguished from those developed under the former NHIS sample design if data are pooled for several years.

The NHIS sample design was changed again in 2016, effectively changing the MEPS design beginning with calendar year 2017. Beginning in Panel 22 of the 2017 files, a new set of variance strata and PSUs were developed. There are 117 variance strata with either two or three variance estimation PSUs per stratum. Therefore, there are a total of 282 (165+117) variance strata in the 2017 Population Characteristics PUF, as it consisted of two panels that were selected under two independent NHIS sample designs. To make the pooling of data across multiple years of the MEPS more straightforward, the numbering system for the variance strata was changed. The strata associated with the new design are numbered from 2001 to 2117.

The NHIS sample design was further modified in 2018, so the MEPS variance structure for the 2019 Population Characteristics PUF was also modified, reducing the number of variance strata to 105. Consistency was maintained with the prior structure in that the 2019 variance strata were also numbered within the range of values from 2001-2117, although there are now gaps in the values assigned within this range. Because of the modification, each stratum could contain up to 5 variance estimation PSUs.

For Panel 26 in the 2021 and 2022 Population Characteristics PUFs, an additional NHIS sample was used for the MEPS to account for increasing nonresponse during the pandemic (as discussed in Section 3.1). The additional sample was assigned to the existing variance strata, so the Population Characteristics PUF continues to have 105 variance strata, numbered 2001-2117, with a few gaps in the values in that range. In many cases, the additional sample was assigned to new variance estimation PSUs; thus, in the Population Characteristics PUF, each stratum contains up to eight variance estimation PSUs.

Some analysts may be interested in pooling data across multiple years of MEPS data. When doing so, analysts should note that, to obtain appropriate standard errors, it is necessary to specify a common variance structure. Before 2002, each annual PUF was released with a variance structure unique to the particular MEPS sample in that year. Starting in 2002, the annual PUFs were released with a common variance structure that allowed users to pool data from 2002 through 2018. However, analysts can no longer do this routinely because the variance structure had to be modified beginning with 2019.

To ensure that variance strata are identified appropriately for variance estimation purposes when pooling MEPS data across several years, analysts can proceed as follows:

1. When pooling any year from 2002 through 2018, use the variance strata numbering as is.
2. When pooling (a) any year from 1996 to 2001 with any year from 2002 or later, or (b) the year 2019 and beyond with any earlier year, use the pooled linkage PUF HC-036, which contains the proper variance structure. The HC-036 file is updated every year so that appropriate variance structures are available with pooled data. Further details on the HC-036 file are included in the public use documentation of the HC-036 file.

3.4.2 Balanced Repeated Replication Method

BRR replicate weights are not provided on this MEPS PUF for the purposes of variance estimation. However, a file containing a BRR replication structure is made available so that users can form replicate weights, if desired, from the final MEPS weight to compute variances of MEPS estimates using either BRR or Fay's modified BRR (Fay, 1989) methods. The replicate weights are useful for computing variances of complex nonlinear estimators for which a Taylor linear form is neither easy to derive nor available in commonly used software. For instance, it is not possible to calculate the variances of a median or the ratio of two medians by using the Taylor linearization method. For these types of estimators, users can calculate a variance using BRR or Fay's modified BRR methods. However, it should be noted that the replicate weights

have been derived from the final weight through a shortcut approach. Specifically, the replicate weights are not computed starting with the base weight, and all adjustments made in different stages of weighting are not applied independently in each replicate. Thus, the variances computed by using this one-step BRR do not capture the effects of all weighting adjustments that would be captured in a set of fully developed BRR replicate weights. The Taylor series approach does not fully capture the effects of the different weighting adjustments either.

The dataset HC-036BRR, MEPS 1996-2021 Replicates for Variance Estimation File, contains the information necessary to construct the BRR replicates. It includes a set of 128 flags (BRR1-BRR128) in the form of half sample indicators, each of which is coded 0 or 1 to indicate whether the person should or should not be included in that particular replicate. These flags can be used in conjunction with the full-year weight to construct the BRR replicate weights. For an analysis of MEPS data pooled across years, the BRR replicates can be formed in the same way by using the HC-036, MEPS 1996-2021 Pooled Linkage Variance Estimation File. For more information about creating BRR replicates, users can refer to the documentation for the [HC-036BRR pooled linkage file](#) on the AHRQ website.

3.5 Using MEPS Data for Trend Analysis

Note: While the Food Security PUF is only available starting in 2016, this section reviews major changes in MEPS that can affect trend analyses.

For analysts using the MEPS data for trend analysis, we note that there are uncertainties associated with 2020, 2021, and possibly 2022 data quality for reasons discussed throughout Section 3.1.2). Preliminary evaluations of a set of MEPS estimates of particular importance suggest that they are of reasonable quality. Nevertheless, analysts are advised to exercise caution in interpreting these estimates, particularly in terms of trend analyses, since access to health care was substantially affected by the COVID-19 pandemic, as were related factors such as health insurance and employment status for many persons.

The MEPS began in 1996, and the utility of the survey for analyzing health care trends expands with each additional year of data; however, when examining trends over time using the MEPS, the length of time being analyzed should be considered. In particular, large shifts in survey estimates over short periods of time (e.g. from one year to the next) that are statistically significant should be interpreted with caution unless they are attributable to known factors such as changes in public policy, economic conditions, or the MEPS methodology.

With respect to methodological considerations, changes in data collection methods, such as interviewer training, were introduced in 2013 to obtain more complete information about health care utilization from MEPS respondents; the changes were fully implemented in 2014. This effort likely resulted in improved data quality and a reduction in underreporting starting in the second half of 2013 and continuing throughout 2014 full-year files; the changes have also had some impact on analyses involving trends in utilization across years. The changes in the NHIS sample design in 2016 and 2018 could also potentially affect trend analyses. The new NHIS sample design is based on more up-to-date information related to the distribution of housing units across the United States. As a result, it can be expected to better cover the full civilian

noninstitutionalized population, the target population for MEPS, as well as many of its subpopulations. Better coverage of the target population helps to reduce the potential for bias in both NHIS and MEPS estimates.

Another change with the potential to affect trend analyses involved major modifications to the MEPS instrument design and data collection process, particularly in the events sections of the instrument. These were introduced in the spring of 2018 and thus affected data beginning with Round 1 of Panel 23, Round 3 of Panel 22, and Round 5 of Panel 21. Since the full-year 2017 MEPS files were established from data collected in Rounds 1-3 of Panel 22 and Rounds 3-5 of Panel 21, they reflected two instrument designs. To mitigate the effect of such differences within the same full-year file, the Panel 22 Round 3 data and the Panel 21 Round 5 data were transformed to make them as consistent as possible with data collected under the previous design. The changes in the instrument were designed to make the data collection effort more efficient and easier to administer. In addition, expectations were that data on some items, such as those related to health care events, would be more complete with the potential of identifying more events. Increases in service use reported since the implementation of these changes are consistent with these expectations. *Analysts should be aware of the possible impacts of these changes on the data and especially trend analyses that include the year 2018 because of the design transition.*

Process changes, such as data editing and imputation, may also affect trend analyses. For example, users should refer to Section 2.5.11: Utilization, Expenditures, and Sources of Payment Variables in the Consolidated PUF (HC 243) and, for more detail, to the documentation for the prescription drug PUF (HC 239A) when analyzing prescription drug spending over time.

As always, it is recommended that, before conducting trend analyses, analysts should review relevant sections of the documentation for descriptions of these types of changes that might affect the interpretation of changes over time.

To smooth or stabilize trend analyses based on the MEPS data, analysts may also wish to consider using statistical techniques such as comparing pooled time periods (e.g. 1996-1997 versus 2011-2012), working with moving averages, or using modeling techniques with several consecutive years of the data.

Finally, statistical significance tests should be conducted to assess the likelihood that observed trends are not attributable to sampling variation. In addition, researchers should be aware of the impact of multiple comparisons on Type I error. Without making appropriate allowance for multiple comparisons, the use of numerous statistical significance tests of trends will increase the likelihood of concluding that a change has taken place when one has not.

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D. Variable-Source Crosswalk

FOR MEPS HC 240: 2022 FOOD SECURITY DATA FILE

SURVEY ADMINISTRATION VARIABLES

VARIABLE	DESCRIPTION	SOURCE
HOMEIDX	HOME ID NUMBER (DUID + RU + ROUND)	Constructed
DUID	PANEL # + ENCRYPTED DU IDENTIFIER	Assigned in Sampling
PANEL	PANEL NUMBER	Constructed
RULETR42	RU LETTER - R4/2	CAPI Derived

FOOD SECURITY VARIABLES - PUBLIC USE

VARIABLE	DESCRIPTION	SOURCE
FSOUT42	HOW OFTEN HAVE YOU RUN OUT OF FOOD	FS20
FSLAST42	HOW OFTEN DID FOOD NOT LAST	FS30
FSAFRD42	HOW OFTEN NOT AFFORD BALANCED MEALS	FS40
FSSKIP42	DID YOU EVER SKIP MEALS	FS50
FSSKDY42	HOW MANY DAYS WERE MEALS SKIPPED	FS60
FSLESS42	DID YOU EVER EAT LESS	FS70
FSHGRY42	DID YOU EVER GO HUNGRY	FS80
FSWTLS42	LOW FOOD MONEY CAUSE WEIGHT LOSS	FS90
FSNEAT42	DID YOU EVER NOT EAT	FS100
FSNEDY42	HOW MANY DAYS DID YOU NOT EAT	FS110

WEIGHTS VARIABLES - PUBLIC USE

VARIABLE	DESCRIPTION	SOURCE
FSWT42	FOOD SECURITY WEIGHT	Constructed
VARSTR	VARIANCE ESTIMATION STRATUM - 2022	Constructed
VARPSU	VARIANCE ESTIMATION PSU - 2022	Constructed