



Methodology Report #22

Sample Design of the Medical
Expenditure Panel Survey Household
Component, 1998–2007



ABSTRACT

This report describes the sample design for the 1998–2007 Medical Expenditure Panel Survey Household Component (MEPS-HC) and provides updates to the earlier descriptions of the 1996 and 1997 MEPS-HC sample designs. Since the sample of households selected for each panel of MEPS-HC is a subsample of households participating in the previous year’s National Health Interview (NHIS) conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention, the report includes a summary of the key features of the NHIS sample design. This report also includes the target sample sizes, number of sampled units, number of completed interviews, and response rates for the MEPS-HC.

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The estimates in this report are based on the most recent data available at the time the report was written. However, selected elements of MEPS data may be revised on the basis of additional analyses, which could result in slightly different estimates from those shown here. Please check the MEPS Web site for the most current file releases.

Center for Financing, Access, and Cost Trends
Agency for Healthcare Research and Quality
540 Gaither Road
Rockville, MD 20850
www.meps.ahrq.gov

The Medical Expenditure Panel Survey (MEPS)

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 non-institutionalized 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 health care. Estimates can be produced for individuals, families, and selected population subgroups. The panel design of the survey, which includes five rounds of interviews covering two full calendar years, provides data for examining person level changes in selected variables such as expenditures, health insurance coverage, and health status. Using computer assisted personal interviewing (CAPI) technology, information about each household member is collected, 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. Each annual MEPS-HC sample size is about 15,000 households. Data can be analyzed at either the person or 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 of the Centers for Disease and Control Prevention. The NHIS sampling frame provides a nationally representative sample of the U.S. civilian non-institutionalized population and reflects an oversample of blacks, Hispanics, and starting in 2006, Asians. MEPS oversamples additional policy relevant sub-groups such as low income households. The linkage of the MEPS to the previous year's NHIS provides additional data for longitudinal analytic purposes.

Medical Provider Component

Upon completion of the household CAPI interview and obtaining permission from the household survey respondents, a sample of medical providers are contacted by telephone to obtain information that household respondents can not accurately provide. This part of the MEPS is called the Medical Provider Component (MPC) and information is collected on dates of visit, diagnosis and procedure codes, charges and payments. The Pharmacy Component (PC), a subcomponent of the MPC, does not collect charges or diagnosis and procedure codes but does collect drug detail information, including National Drug Code (NDC) and medicine name, as well as date filled and sources and 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.

Survey Management

MEPS-HC and MPC data are collected under the authority of the Public Health Service Act. Data are collected under contract with Westat. Data sets and summary statistics are edited and published in accordance with the confidentiality provisions of the Public Health Service Act and the Privacy Act. The National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention provides consultation and technical assistance.

As soon as data collection and editing are completed, the MEPS survey data are released to the public in staged releases of summary reports, micro data files, and tables via the MEPS Web site: www.meps.ahrq.gov. Selected data can be analyzed through MEPSnet, an on-line interactive tool designed to give data users the capability to statistically analyze MEPS data in a menu-driven environment.

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, 540 Gaither Road, Rockville, MD 20850; 301-427-1406.

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Sample Design of the Medical Expenditure Panel Survey Household Component, 1998–2007

Trena M. Ezzati-Rice, Frederick Rohde, Janet Greenblatt

Background

The Medical Expenditure Panel Survey (MEPS) Household Component, a nationally representative sample of the U.S. civilian non-institutionalized population, has been conducted on an annual basis since 1996 by the Agency for Healthcare Research and Quality (AHRQ), U.S. Department of Health and Human Services (DHHS). The MEPS provides national estimates of health care use, expenditures, sources of payment, and health insurance coverage as well as information on respondents' health status, demographic/socio-economic characteristics, employment status, access to health care, and satisfaction with health care. The survey reports estimates for persons and families as well as subgroups of the population.

This report describes the sample design of the MEPS Household Component (MEPS-HC) for 1998 through 2007 and updates descriptions of the earlier MEPS sample designs. MEPS Methodology Report 2 details the sample design of the 1996 MEPS-HC and MEPS Methodology Report 11 describes the 1997 MEPS (Cohen SB, 1997; Cohen SB, 2000). An additional report provides an overview of the core components of the MEPS data collection and the statistical features of the survey (Cohen SB, 2003). This updated report also includes the target sample sizes, number of sampled units, number of completed interviews and response rates for the recent panels of the MEPS.

Sample Design

Summary of Sample Design

The MEPS-HC is a complex national probability survey of the U.S. civilian noninstitutionalized population. Each year a new panel of households is selected from among those households that participated in the previous year's National Health Interview Survey (NHIS), another large ongoing Federal health survey conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention, DHHS. Each new MEPS annual sample is referred to as a panel. In the MEPS, for each new annual sample, data are collected through a series of five rounds of computer-assisted personal interviews (CAPI) over 30 months to yield annual data for two full calendar years.

As illustrated in Figure 1, a new MEPS panel of households has been selected and fielded each year since 1996. During each calendar year (with the exception of 1996) data are collected simultaneously for two MEPS panels. One panel is in its first year of interviews (e.g., in the year 2001, Rounds 1, 2, and 3 of Panel 6), while the prior year's panel is in its second year of data collection (e.g., in 2001, Rounds 3, 4, and 5 of Panel 5).

Figure 1. MEPS Household Component Overlapping Panel Design MEPS Panel

MEPS Panel	Year							
	1996	1997	1998	1999	2000	2001	2002	→
1	R1 R2 R3 R4 R5							
2		R1 R2 R3 R4 R5						
3			R1 R2 R3 R4 R5					
4				R1 R2 R3 R4 R5				
5					R1 R2 R3 R4 R5			
6						R1 R2 R3 R4 R5		
↓							R1 R2 R3	

It should be noted that Round 3 for each MEPS panel overlaps two calendar years. In 1996, the first year of MEPS, only one panel (Panel 1) was fielded, thus the annual data for 1996 were based on this single panel of data. However, starting in 1997, to increase statistical power of annual estimates produced from MEPS, data are combined across two distinct nationally representative samples, making use of the MEPS overlapping panel design. More specifically, annual estimates are made by combining data from the panel in its first year of data collection and the panel in its second year of data collection. For example, 2001 annual estimates are represented by data collected for the second year of Panel 5 and data collected in year one of Panel 6.

In addition to annual estimates, the MEPS design structure permits longitudinal estimates over two consecutive calendar years, thus allowing examination of person-level changes in selected variables over a two year period. For example, research analysts can assess the persistence of high health care expenditures by examining whether individuals with high expenditures in one year have high expenditures in the subsequent year or shift to a higher or lower expenditure level (Cohen SB and Ezzati-Rice TM, 2006).

MEPS Linked to the National Health Interview Survey (NHIS)

The set of households selected for each panel of the MEPS-HC is a subsample of households participating in the previous year's NHIS conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention. The NHIS sampling frame is a nationally representative sample of the U.S. civilian noninstitutionalized population. The use of a subsample of NHIS households provides budgetary savings by eliminating the need to independently list and screen households to locate selected policy-relevant subgroups of the population. The linkage also provides an additional data point for enhanced longitudinal analyses (Cohen SB, 2003; Cohen SB, Makuc DM, Ezzati-Rice TM, 2007).

Since the MEPS sample of households is subsampled from the NHIS, some knowledge of the NHIS sample design is needed in order to understand the MEPS sample design. The NHIS has been in continuous operation since 1957. Every ten years the NHIS sample design is updated to reflect the changes to the U.S. population. Detailed information about the NHIS sample designs is available from the NCHS Web site.¹ For example, the NCHS Series 2, Number 130 report describes the sample design of the

¹ <http://www.cdc.gov/nchs/products/pubs/pubd/series/sr02/ser2.htm>

1995–2004 NHIS. The subsample of households selected for each MEPS panel from 1996–2006 was based on the 1995–2004 NHIS sample design.

Overview of 1995–2004 NHIS Sample Design

The 1995–2004 NHIS was based on a stratified multi-stage sample design. A brief and simplified description of the NHIS design follows. The first stage of sample selection was an area sample of Primary Sampling Units (PSUs), where PSUs generally consisted of one or more counties. Many PSUs were selected with certainty, i.e., “self-representing” PSUs. Within each PSU, density strata were formed using 1990 Census population distributions of Hispanic persons and black persons for single or groups of blocks or block equivalents. Within each density stratum, “supersegments” were formed, consisting of clusters of housing units. Samples of supersegments were selected for use over a 10-year data collection period for the NHIS. Reserve samples for two additional years were also selected. Households within supersegments were subsequently selected for each calendar year the NHIS was carried out. Households containing Hispanics and blacks were oversampled at rates of approximately 2 and 1.5 times, respectively, the rate of remaining households.

The complete NHIS sample for each year of the 1995–2004 NHIS consisted of 358 PSUs. Each year a sample of approximately 76,000 households was selected and approximately 40,000 households were interviewed. The annual NHIS sample of households is partitioned into four subdesigns, referred to as “panels”, each with approximately the same number of households (NHIS, Series 2 report). (The terminology Panel for the NHIS has been used by the Census Bureau, the NHIS data collection agent, for the 1985–1994 and 1995–2004 NHIS, and this term “Panel” should not be confused with the term’s frequent, but different usage in the context of longitudinal surveys like the MEPS.) In the NHIS Panel context, the NHIS survey sample is considered an all-area sampling frame. In parts of the country where local governments issue building permits, the area sample is supplemented with a sample of permits for residential housing units built after the decennial census. Within each sample PSU, the survey uses an area frame and in some PSUs a permit frame is also used. The area sample and permit frame listings define the Second Stage Units (SSUs) from which the NHIS household samples are taken over the life of the design, usually a 10 year period. (Note: The 1995 NHIS sample design was used for an 11 year period, i.e., 1995–2005). The SSUs for the NHIS are partitioned into four subdesigns or Panels, and are identified by Panel labels 1, 2, 3, or 4. Typically, an SSU is assigned a panel label which remains fixed for the life of the survey.

There are two main objectives of the NHIS Panel subdesign structure. The first objective is to provide nationally representative subdesigns with “similar” features but with smaller sample sizes as contingencies to deal with any potential NCHS budget exigencies for the NHIS. The second objective is to provide a subsample for use as a sampling frame for a smaller “follow-on” survey (i.e., a survey whose sample design is then said to be linked with that of the NHIS). Panels can be further sub-divided by sample assignment weeks (e.g., calendar quarters) to provide even smaller surveys. Since 1996, two panels of the NHIS have been reserved for use by AHRQ for the MEPS. Each MEPS panel can be linked back to the previous year’s NHIS public use data files. For information on obtaining MEPS/NHIS link files, please see www.meps.ahrq.gov/data_stats/more_info_download_data_files.jsp.

1998–2006 MEPS Sample Design (MEPS Panels 3 through 11)

This section documents the 1998–2006 MEPS sample designs. Earlier reports provide the details for the 1996 and 1997 designs (Cohen SB, 1997; Cohen SB, 2000).

Target Population and Sampling Frame

The target population for the MEPS consists of all persons who are members of the civilian noninstitutionalized (e.g., not in prisons or nursing homes) population at any time during the year and living in the 50 States or the District of Columbia. In addition, the sample is designed to meet a specified level of precision in estimates for certain subgroups of the population, including persons who have a family income less than 200% of the Federal poverty level and selected racial and ethnic groups.

The NHIS serves as the sampling frame for the MEPS. In most years, the MEPS annual household panel sample is selected from responding households in two of the four NHIS panels during calendar quarters 1–3 of the previous year. The NHIS quarter 4 is not processed soon enough for use in selecting the following year’s MEPS sample as each new MEPS panel must be fielded in January. Thus, a sample representing about three-eighths of the NHIS responding households is generally made available for use in MEPS.

Analytical goals, precision requirements, and sample size targets

The broad sample design goals for the MEPS include:

- A sample that will provide unbiased national and regional estimates (four Census regions) of health care expenditure estimates and other health parameters with targeted precision, and
- A sample that will meet targeted precision requirements for policy relevant subgroups of the population.

Based on varying DHHS objectives coupled with the MEPS budget resources, the sample size and subdomains oversampled for MEPS can vary from year to year. The overall target precision requirement for the current MEPS-HC (2001 and forward) is an average design effect of 1.6 for key survey estimates for policy relevant population subgroups (Cohen SB, 2003). The MEPS person-level precision requirements are specified for national estimates derived from individuals that are considered full year respondents (individuals with responses for their entire period of living in the civilian noninstitutionalized population). Consequently, in the determination of sample sizes necessary to achieve the precision requirements, adjustments must be made for dwelling unit nonresponse and survey attrition to determine the required number of initial sample units per year. Starting with calendar year 2002, the target sample size for producing annual estimates for the MEPS-HC is approximately 15,000 families (reporting units) or about 37,000 persons. While these target precision levels and samples sizes have been specified, the targets are sometimes modified based on analytical objectives and AHRQ budget resources.

Sample Selection Criteria and Oversampling

The initial MEPS-HC sample consists of a subsample of households that responded to the prior year's NHIS. After selection of the NHIS households (occupied dwelling units), "reporting units" are formed based on information collected in NHIS and for fielding of the MEPS sample. In brief, a household may contain one or more family units, each with one or more individuals. The NHIS family units become reporting units (RUs) for MEPS. A more detailed discussion of the definition of RUs for MEPS is found in the section "Sampling Unit Definitions and Eligibility Criteria".

The initial sample size for each panel of the MEPS is determined on the basis of the budget resources available at the time of sample selection and on the eligible sample available from NCHS, thus the sample sizes have varied from year to year. A review of the 1996 and 1997 MEPS is first provided followed by more specific details for the 1998–2006 MEPS. The 1995 NHIS subsample selected for the 1996 MEPS consisted of 195 PSUs. An initial subsample of 10,597 households was selected from NHIS Panels 1 and 3 in two targeted quarters (2 and 3) of the NHIS. (Table 1) The 1997 MEPS panel (Panel 2) sample of 6,300 households was again selected in the same 195 PSUs (as in MEPS 1996) and was selected as a subsample of households responding to the 1996 NHIS, Panels 1 and 3 in three targeted NHIS quarters (1, 2, and 3). Both the 1996 and 1997 MEPS reflected an oversample of Hispanics and blacks at the same ratios as in the NHIS (Hispanics, 2.0:1; blacks 1.5:1). In addition, the 1997 MEPS oversampled several policy relevant domains at varying rates (see Table 1).

In order to select the MEPS sample, the NHIS households are included in the frame based on the following definitions:

- Responding Household: NHIS household (HH) with ACTION code = 4 (partial interview, no follow-up) or ACTION code 10 (complete interview) and at least one person with HHSTAT (household status) not equal 'D' (deleted).
- Eligible Household: All responding HHs in the NHIS quarters and panels set aside for MEPS. (In most years, the HHs eligible for MEPS are from calendar quarters 1–3 in 2 of 4 NHIS panels.)

Prior to sample selection, the NHIS occupied dwelling units (DUs) within pre-specified sampling classes are hierarchically sorted by the following measures:

- Calendar year quarter
- Interview week within each respective calendar quarter
- Census division
- State
- Metropolitan Statistical Area (MSA) classification
- NHIS primary sampling unit (PSU)
- NHIS segment within PSU

The household level sampling domain variables vary slightly from year to year and include a hierarchical classification: any Asian in household, any family in household with predicted poverty, any Hispanic in household, any black in household, and all others (i.e., no Asian, predicted poverty, Hispanic, or black).

The sample of households for the 1998–2001 MEPS panels ranged from approximately 5,200–11,000 households (Table 1, Column 7). In 1999 and 2000, due to budgetary constraints, the number of MEPS PSUs was reduced from 195 to 100. In 2002, some design enhancements were made with an increased sample size and the number of PSUs also increased to 195 as in the earlier MEPS panels. The sample of households for the 2002–2006 MEPS from the 2001–2005 NHIS ranged from about 8,100 to 9,500 households. As in the earlier years, the oversample of Hispanics and blacks in the NHIS carried over to MEPS. In addition, the NHIS responding households eligible for MEPS that contained either Asian Americans or families predicted (based on a statistical model) to have low income (i.e., <200% Federal poverty level) were selected with certainty. For the 2004–2006 MEPS panels, in addition to the certainty selection of Asians and low income families, households containing blacks and not among those households selected with certainty were further oversampled. The sampling rates by subdomains, the number of selected NHIS households, number of PSUs, and number of initial MEPS Reporting Units by MEPS panel and year are shown in Table 1. (Note: The sample sizes presented in Table 1 are confined to the new panel introduced each year. The number of responding families and persons for use in producing annual estimates are discussed later.)

Sampling Unit Definitions and Eligibility Criteria

The definition of dwelling units and group quarters in the MEPS-HC are generally consistent with the definitions employed for NHIS. The definitions used are:

- Dwelling unit (DU) is a house, apartment, group of rooms, or single room occupied as separate civilian non-institutional living quarters or vacant but intended for occupancy as separate living quarters. This term is the NHIS definition for households and is the unit sampled for the MEPS.
- Group quarters consist of a single civilian non-institutional dwelling or structure in which nine or more unrelated persons reside and where inhabitants are not considered a part of any other dwelling unit.

A Reporting Unit (RU) is a person or group of persons in the sampled DU who are related by blood, marriage, adoption, foster care, 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. Regardless of the legal status of their association, two persons living together as a "family" unit are treated as a single RU if they chose to be so identified. Unmarried college students (less than 24 years of age) who usually live in a sampled household but who live away from home and go to school at the time of the MEPS interview are treated as a student RU separate from that of their parents for the purpose of data collection. Examples of different types of RUs are:

1. A married daughter and her husband living with her parents in the same DU constitute a single RU;
2. A husband and wife and their unmarried daughter, age 18, who is living away from home while at college constitute two RUs; and
3. Three unrelated persons living in the same DU would each constitute a distinct RU, i.e., a total of three RUs.

MEPS Data Collection Eligibility

The only major difference in eligibility status for housing units between NHIS and MEPS is that college dorms represent ineligible dwelling units for MEPS. College aged students living away from home during the school year were interviewed at their place of residence for the NHIS, but, in contrast, are identified by and linked to their parents' household for MEPS. Once the MEPS sample is selected from among the NHIS households characterized as NHIS respondents, RUs representing students living in student housing or consisting entirely of military personnel are deleted from the sample. For the NHIS, college students living in student housing are sampled independently from their families. For MEPS, such students are identified through the sample selection of their parents' RU. In MEPS, removing college students found in college housing sampled for the NHIS eliminates the opportunity of multiple chances of selection for MEPS for these students. Military personnel not living in the same RU as civilians are ineligible for MEPS. After such exclusions, all RUs associated with households selected from among those identified as NHIS responding households are then fielded in the first round of MEPS. The initial number of RUs for each MEPS panel is shown in Table 1, Column 8. Standard or primary RUs are the original RUs from NHIS. However, a new RU will be created when members of the household leave the primary RU and are followed according to the rules of the survey.

Three key factors define a person's interview status for each round of data collection in the MEPS. These factors are: "in-scope" status, Keyness status, and eligibility status.

In-scope

A person is considered as in-scope during a MEPS round or a reference time period if he or she was a member of the U.S. civilian, noninstitutionalized population at some time during the specific data collection round or time period.

Keyness for MEPS—"Key and non-Key Persons"

The term "Keyness" is related to an individual's chance of being included in MEPS. A person is "Key" if a person is linked for sampling purposes to the set of NHIS sampled households designated for inclusion in MEPS. Specifically, a "Key" person was a member of an NHIS household at the time of the NHIS interview or who becomes a member of such a household after being out-of-scope at the time of the NHIS (examples of the latter situation include newborns and persons returning from military service, an institution, or living outside the United States).

A "non-Key" person is one whose chance of selection for the NHIS (and MEPS) was associated with a household eligible, but not sampled for the NHIS, and who later becomes a member of a MEPS RU. MEPS data are collected for the period of time a non-Key person is part of the sampled unit to provide information for family-level analyses. However, non-Key persons who leave a sample household unaccompanied by a Key, in-scope member are not followed for subsequent interviews.

In summary, Keyness status is set at the time the person enters MEPS, and a person's Keyness status never changes. It should be noted that a person might be Key even though not part of the civilian, noninstitutionalized portion of the U.S. population. For example, a person in the military may have been living with his or her civilian spouse

and children in a household sampled for NHIS. The person in the military would be considered a “Key” person for MEPS; however, such a person would not be eligible to receive a person-level sample weight if he or she was never in-scope during a defined survey period.

Eligibility

The eligibility of a person for MEPS pertains to whether or not data are to be collected for that person. All of the Key in-scope persons of a sampled RU are eligible for data collection. The only non-Key persons eligible for data collection are those who live in an RU with at least one Key, in-scope person. Their eligibility continues only for the time that they are living with at least one such person. The only out-of-scope persons eligible for data collection are those living with Key in-scope persons, again only for the time they live with such a person. (Only persons in the military can meet this description e.g., a person on full-time active military duty, living with a spouse who is Key).

2007 MEPS (Panel 12) and 2006 NHIS Sample Redesign

As stated at the beginning of this report, the NHIS traditionally is redesigned about every 10 years following the most current decennial census to take account of demographic changes in the population. Since its beginning, the MEPS-HC has been conducted in a set of NHIS PSUs based on the sample design developed for the 1995–2004 NHIS. The selection of PSUs for what is known as the 1995–2004 NHIS sample design was based on 1990 Census data. It should be noted, however, that the 1995 design was used for an additional NHIS year, that is, through 2005. NHIS implemented a new sample design in 2006, and it is anticipated that the new sample design will be in place until the next redesign around 2014. The new 2006 NHIS sample design is based on the 2000 Census. This section primarily focuses on changes that occurred in the new NHIS design relative to the previous design and the associated changes for the 2007 MEPS and forward.

As for the earlier NHIS sample designs, the 2006–2014 NHIS design is a complex multistage sample design of the civilian noninstitutionalized U.S. population with stratification, clustering, and oversampling of selected population subgroups. The new 2006 NHIS sample of households was sampled independently from that which was selected under the 1995–2004 design. However, the fundamental design structure of the new 2006 NHIS sample design is very similar to the previous sample design which was in place from 1995 to 2005. But, there are some important differences which are highlighted in the following discussion.

The target universe for the NHIS is all dwelling units in the U.S. that contain members of the civilian noninstitutionalized population. As in the previous design, the target universe was first partitioned into primary sampling units (PSUs), each of which consisted of a single county, a group of contiguous counties, or metropolitan areas. Those PSUs defining the largest metropolitan statistical areas were selected with certainty and were designated as self-representing (SR) PSUs. The remaining PSUs in the universe were designated as non self-representing (NSR) or non-certainty PSUs and a sample of these PSUs was selected. The NSR PSUs were stratified by state and sampled into the NHIS generally at the rate of two PSUs per state using a probability proportional to population size according to the 2000 Census. Within a few NSR strata with smaller population sizes, one PSU was selected. Most of the self-representing PSUs

of the previous design are still self-representing in the new design. The differences in the location of the PSUs between the two designs occur mostly in the NSR areas. The new design has 428 PSUs. The previous design had 358 PSUs. The difference in the number of PSUs is largely due to differences in how the PSUs are defined in the new design compared to the previous design. In the new design, NHIS is partitioning most of the SR PSUs into mini-PSUs, i.e., smaller geographic areas (one or more counties) known as SPSUs or stratification PSUs. For example, most surveys will refer to a large SR PSU like Boston as one big SR PSU. However, with the new NHIS design, there are multiple distinct PSUs (SPSUs) for the Boston area.

Oversampling of the black and Hispanic populations was retained in the 2006 NHIS design to facilitate estimation of health related statistics for these two minority groups. The new sample design also includes an oversample of the Asian population. As in the previous design, at the second stage of sampling, the entire area within each selected PSU was partitioned into a substrata consisting of single or contiguous blocks or block equivalents. These substrata were assigned to 20 density strata defined by the concentration of blacks, Hispanics and Asians from the 2000 Decennial Census. New construction housing (or permit listings) within a PSU was included as its own substratum in order to produce a current sample of households including new construction. Thus, the number of substrata is 21, the same number as in the previous design. The consideration of Asians in the definition of the second-stage density strata was new under the 2006–2014 NHIS design; the previous design had only taken into consideration the concentrations of blacks and Hispanics. Also in the new design, the definitions that constituted low, medium, and high concentrations of each minority group were allowed to vary slightly from PSU to PSU. In the previous design, the definitions were consistent in all PSUs. Finally, as with the previous design, the area segments within each density stratum were partitioned into supersegments or clusters of housing units. These supersegments were subsequently sampled into the NHIS, and the housing units within them assigned to each calendar year, quarter and week of NHIS data collection. The sample adult selection process for the NHIS was also revised under the new sample design in 2006 such that when elderly black, Hispanic, or Asian persons 65 years or older were present they have an increased chance of being selected as the sample adult. The NCHS report describing the 1995–2005 design, Series 2, Number 130, provides additional details that still apply to the new sample design. This publication is available on-line at <http://www.cdc.gov/nchs/products/pubs/pubd/series/sr02/130-121/130-121.htm>.

A new report providing more specific details of the 2006 NHIS sample design is being developed by NCHS.

Due to budgetary constraints, the total number of sampled housing units under the 2006–2014 NHIS design was reduced relative to the previous sample design (ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2006/srvy_desc.pdf). The reduction in households will come entirely from the nonminority density strata. That is, the target number of households with black and Hispanic respondents will be similar to that achieved under the old NHIS design, while the number with Asian respondents will be greater under the new design. The new NHIS sample design is anticipated to result in approximately 87,500 persons residing in 35,000 households with completed interviews.

2007–2015 MEPS Sample Design

The sample of households for MEPS Panels 1 through 11 (1996–2006) was generally selected from the first three calendar quarters of households in NHIS Panels 1 and 3 as sampled under the 1995–2005 NHIS design. Starting in 2007, the households in MEPS Panels 12 through 20 (2007–2015) will be selected from NHIS Panels 1 and 4 as designed for the 2006–2014 NHIS design. The change to a subsample of responding households in NHIS Panels 1 and 4 rather than NHIS Panels 1 and 3 was made to maximize the number of overlapping PSUs utilized by the MEPS across the two independent NHIS designs. That is, the PSUs in NHIS Panels 1 and 4 as selected for the 2006–2014 NHIS design have the most overlap with the PSUs in NHIS Panels 1 and 3 as selected in the 1995–2004/5 NHIS design. This will minimize field data collection costs for the MEPS.

In general, each new MEPS Panel will continue to be sampled from the first three calendar quarters of the prior year’s responding NHIS annual sample among the two panels set aside for MEPS. To reduce operational issues associated with fielding a new sample design in the same year as implementation of a new windows-based computer-assisted personal interview (CAPI) instrument, the 2007 MEPS sample was limited to eligible responding housing units from the first two calendar quarters, Panels 1 and 4 of the 2006 NHIS. The sample yield and sampling rates for the MEPS Panel 12 fielded in January 2007 are shown in Table 1. In particular, a total of 7,319 NHIS housing units, representing 7,467 responding units, were selected for the MEPS Panel 12.

Sample Yields and Survey Response Rates

Sample Size

As described in the earlier “Summary of Sample Design” section, to produce MEPS annual calendar year estimates, data are combined across two overlapping panels. A preliminary data file is also produced in MEPS which allows selected estimates to be produced for the first half of the year at approximately six months following data collection. These early estimates are also based on two overlapping panels, namely data collected during Round 1 of a current year’s panel and during Round 3 of the previously fielded panel. Tables 2a and 2b provide a summary of the number of completed interviews (households (dwelling units), families, and persons) by year and panel based on the MEPS Point-in-Time Files and Annual Full Year Files, respectively. Tables 3a and 3b provide the number of completed person-level interviews by age group, gender, race-ethnicity group, region, and MSA status based on the Point-in-Time Files and Annual Full Year Files, respectively.

While sample size is an often used indicator of the reliability of estimates obtained from a survey, sample size is not the only feature of the sample that affects the reliability of estimates for a stratified multistage sample survey like the MEPS and its sample frame, the NHIS. The NHIS sample is clustered with multiple stages of selection and includes oversampling of selected minorities all of which carry over to the MEPS. In addition, the MEPS sample requires additional adjustments to account for differential selection probabilities along with the post-survey adjustments for household and person-level nonresponse. In this setting, the precision of the survey estimates can be expected to be less (compared to a simple random sample) when the clustering, multistage sample

design factors, and unequal weighting are accounted for in the estimates of variance. Users of the MEPS micro data must be aware that standard statistical estimation software does not properly account for these factors in the estimates of variability (such as the standard error of sample estimates or corresponding confidence intervals) for MEPS estimates. 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, and jackknife replication. Various software packages provide analysts with the capability of implementing these methodologies. The variables needed to calculate appropriate standard errors based on the Taylor-series linearization method are included on the MEPS public use files. Software packages that permit the use of the Taylor-series linearization method include SUDAAN, Stata, SAS (version 8.2 and higher), and SPSS (version 12.0 and higher). Users of these software packages should refer to the corresponding software user documentation for complete information on the capabilities of each package.

Response Rates

The general approach for calculation of MEPS response rates along with an illustrative example is provided in this section. In particular, response rates for annual 2002 calendar year data are discussed. Because of the linkage of the NHIS and the MEPS, the response rate for MEPS is a combination of the response rate for the NHIS and the MEPS round specific response rates. Due to the overlapping panel design for production of annual estimates, the calculation of the annual response rates for MEPS likewise comprised the two overlapping panel specific response rates. Further, the panel-specific response rates get weighted by their respective sample sizes.

To understand the calculation of MEPS response rates, some key features related to MEPS data collection are first discussed. When an RU is visited for a round of data collection, any changes in RU membership are identified. Such changes include RU members who have moved to another location in the U.S., thus creating a new RU to be interviewed for MEPS, as well as student RUs. Thus, the number of RUs eligible for MEPS interviewing in a given round can only be determined after data collection is fully completed. The ratio of the number of RUs completing the MEPS interview in a given round to the number of RUs characterized as eligible to complete the interview for that round represents the "conditional" round specific response rate expressed as a proportion. It is "conditional" in that it pertains to the set of RUs characterized as eligible for MEPS for that round, and thus is "conditioned" on prior participation rather than representing the overall response rate through that round. For example, in Table 4, for Panel 6, Round 2 the ratio of 9,222 (Row G) to 9,666 (Row F) multiplied by 100 represents the percentage response rate for Round 2 (95.4 percent when computed), conditioned on the set of RUs characterized as eligible for MEPS for Round 2. Taking the product of the response rate of the NHIS sample designated for use in MEPS (Row A) and the product of the response rates (ratio of the number of completed interviews to the number eligible) for each consecutive set of MEPS rounds beginning with round one produces the overall response rate through the last MEPS round specified.

An example response rate calculation for a full year MEPS is as follows. To produce annual health care and expenditure estimates for calendar year 2002, data from Panel 6 and Panel 7 are combined. More specifically, data collected covering calendar year 2002 for Rounds 3 through 5 of Panel 6 are combined with corresponding 2002 data from the first three rounds of Panel 7 to produce calendar year 2002 estimates. The overall

response rate for the combined sample in Panels 6 and 7 for 2002 was obtained by computing the product of the relative responding sample sizes and the corresponding overall panel response rates and then summing the two products. Details of the calculations as carried out for the 2002 MEPS annual response rate are provided below.

Panel 7 Response Rate

For MEPS Panel 7, Round 1, a total of 8,083 households was fielded in 2005 (Row C of Table 4), a nationally representative subsample of the households who had responded to the 2001 NHIS. Table 4 further shows for each round the number of RUs eligible for interviewing as well as the number of RUs completing the MEPS interview. Computing the three individual round "conditional" response rates and then taking the product of the three response rates and the factor 89.7 (the percentage of the NHIS sampled households designated for use in MEPS, i.e., those initially characterized as responding in NHIS) yielded an overall response rate of 65.6 percent for Panel 7 through Round 3.

Panel 6 Response Rate

For MEPS Panel 6, a total of 10,651 households was fielded in 2001 (as indicated in Row C of Table 4), a nationally representative subsample of the households who had responded to the 2000 NHIS. Table 4 shows the number of RUs eligible for interviewing and the number completing the household interview for all five rounds of Panel 6. The overall response rate for Panel 6 was computed in a similar fashion to that of Panel 7, but covered all five rounds of MEPS interviewing rather than just the first three rounds. The overall response rate for Panel 6 through Round 5 was 64.0 percent.

2002 Combined Panel Response Rate

The combined response rate for the 2002 annual data was obtained by taking a weighted average of the panel specific response rates. The Panel 6 response rate was weighted by a factor of 0.55 and the Panel 7 response rate was weighted by a factor of 0.45, reflecting approximately the distribution of the overall sample between the two panels. (Note: The panel specific weighting factors vary from year to year.) The resulting overall annual response rate for the combined panels was thus computed as $(.55 \times 64.0)$ plus $(.45 \times 65.6)$ for a final combined 2002 annual response rate of 64.7 percent (as shown in the last row of Table 4).

The individual panel-specific and the overall (combined panel response rates) response rates for annual MEPS data analyses are summarized in Table 5. These response rates reflect the response to both the NHIS and the multiplicative MEPS round specific response rates. For 1996 thru 2000, the standardized response rates shown in Table 5 are slightly different from those in the 1996 and 1997 Methodology Reports and in the public use file documentations. This is due to a slight modification in the methodology for computing the response rates. The resulting changes are minor, but more importantly, the change provides standardized response rates for tracking trends across time.

Development of Analysis Weights

Weights are developed for use in the derivation of nationally representative population estimates to support analysis of data collected in sample surveys. The analytical weights typically account for any disproportionate probabilities of selection, unit nonresponse,

person-level survey attrition (e.g., in a longitudinal survey), and an adjustment to make the weighted sample distributions agree with known population estimates. This general approach is used in the MEPS (Wun LM, Ezzati-Rice TM, et al, 2007), including (1) an adjustment for dwelling unit nonresponse at Round 1 to account for nonresponse among those households subsampled from NHIS for the MEPS, (2) an adjustment for nonresponse at the person level to account for survey attrition across the multiple rounds of data collection, and (3) a final step of poststratification and raking to known population totals for the civilian noninstitutionalized population of the United States. More detailed information on the estimation strategies used in MEPS can be found on the MEPS Web site: www.meps.ahrq.gov.

Summary

The MEPS, a comprehensive population-based health care survey, is an important resource to inform health care policy and practice. This report provides an update to the 1996 and 1997 MEPS sample design descriptions with a comprehensive overview of the MEPS Household Component sample design for 1998 through 2007. Since the set of households selected for each new panel of the MEPS is a subsample of those who participated in the previous year's National Health Interview Survey (NHIS), key statistical features of the NHIS sample design are also included. In addition, this report includes a summary of the total number of households sampled for the MEPS, the number of responding dwelling units, families, and persons by year, and the overall annual survey response rates.

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References

- Cohen SB. *Sample Design of the 1996 Medical Expenditure Panel Survey Household Component*. Rockville (MD): Agency for Health Care Policy and Research; 1997. MEPS Methodology Report No. 2. AHCPR Pub. No. 97-0027.
- Cohen SB. *Sample Design of the 1997 Medical Expenditure Panel Survey Household Component*. Rockville (MD): Agency for Health Care Research and Quality; 2000. MEPS Methodology Report No. 11. AHRQ Pub. No. 01-0001.
- Cohen SB. Design Strategies and Innovations in the Medical Expenditure Panel Survey. *Medical Care*, July 2003; 41(7) Supplement: III-5–III-12.
- Cohen SB, Makuc DM, and Ezzati-Rice TM. Health insurance coverage during a 24 month period: a comparison of estimates from two national health surveys. *Journal of Health Services and Outcomes Research Methodology* (2007) 7:125–144.
- Cohen SB and Ezzati-Rice TM. (2006). Designing national health care surveys to inform health policy. In *Statistics: A Guide to the Unknown, Fourth Edition*, 89–101. Belmont (CA): Duxberry of Thomson Brooks/Cole.
- Wun LM, Ezzati-Rice TM, Diaz-Tena N, and Greenblatt J. On modeling response propensity for dwelling unit (DU) level non-response adjustment in the Medical Expenditure Panel Survey (MEPS). *Statistics in Medicine*, 2007; 26:1875–1884.

Tables

Table 1. Key Sample Design Features of the Medical Expenditure Panel Survey Household Component: 1996–2007

Panel	Year	Number of PSUs* Source of Sample = NHIS*)	Eligible NHIS* Quarters/ Panels	Additional oversamples ^a	Sample rate	Number of sampled households (Dwelling Units)	Initial number of reporting units (RUs)
1	1996	195	Q2,3 /P1,3	None	1.000	10,597	10,799
2	1997	195	Q1,2,3/ P1,3	Adults (18+) with functional impairments ^b	0.428	6,300	6,461
				Children (<18) with limitations	1.000	478	
				Persons 18–64 predicted to incur high medical expenditures	1.000	601	
				Persons with low income ^c	1.000	596	
				Adults (18+) with other limitations ^d	0.600	1,238	
				Persons 65 years+ Other	0.300	194	
					0.300	647	
					0.300	2,546	
3	1998	195	Q2 /P1,3	None	1.000	5,166	5,410
4	1999	100	Q1,2,3 /P1	None	0.945	6,900	7,103
5	2000	100	Q1,2,3 /P1	None	0.741	5,380	5,533
6	2001	195	Q1,2,3 /P1,3	None	0.738	10,704	11,026
				Q1,2	0.750	7,004	
				Q3	0.716	3,700	
7	2002	195	Q1,2,3 /P1,3	Q1,2 Asian/<200% poverty ^e	0.560	8,132	8,339
				Q1,2 Other	1.000	1,718	
				Q3 Asian/<200% poverty ^e	0.500	3,781	
				Q3 Other	1.000	953	
					0.393	1,680	
8	2003	195	Q1,2,3 /P1,3	Q1,2 Asian/<200% poverty ^e	0.616	8,400	8,706
				Q1,2 Other	1.000	1,623	
				Q3 Asian/<200% poverty ^e	0.500	3,698	
				Q3 Other	1.000	825	
					0.595	2,254	
9	2004	195	Q1,2,3 /P1,3	Q1,2 Asian/<200% poverty ^e	0.634	8,640	8,939
				Q1,2 Black	1.000	1,516	
				Q1,2 Other	0.750	640	
				Q3 Asian/<200% poverty ^e	0.600	3,554	
				Q3 Black	1.000	1,050	
				Q3 Other	0.500	271	
					0.431	1,609	

10	2005	195	Q1,2,3 /P1,3		0.646	8,546	8,748
				Q1,2 Asian/<200% poverty ^e	1.000	1,616	
				Q1,2 Black	0.750	617	
				Q1,2 Other	0.600	3,395	
				Q3 Asian/<200% poverty ^e	1.000	956	
				Q3 Black	0.750	423	
				Q3 Other	0.427	1,536	
11	2006	195	Q1,2,3 /P1,3		0.665	9,464	9,654
				Q1,2 Asian/<200% poverty ^e	1.000	1,726	
				Q1,2 Black	0.750	698	
				Q1,2 Other	0.600	3,842	
				Q3 Asian/<200% poverty ^e	1.000	959	
				Q3 Black	0.750	408	
				Q3 Other	0.500	1,831	
12	2007	183**	Q1,2 /P1,4		0.909	7,319	7,467
				Q1 Asian/<200% poverty ^e	1.000	780	
				Q1 Hispanic	0.750	378	
				Q1 Black	0.750	324	
				Q1 Other	0.750	1,501	
				Q2 Asian/<200% poverty ^e	1.000	943	
				Q2 Hispanic	1.000	592	
				Q2 Black	1.000	560	
				Q2 Other	1.000	2,241	

^aThe oversampling of Hispanic persons and black persons carries over from the NHIS for each MEPS panel. The oversampling of Asian persons carries over from the NHIS starting with Panel 12 of MEPS.

^bNeeds help in 1 or more activities of daily living (ADLs), such as bathing and dressing.

^c Low incomes refers to incomes below 200% of the Federal poverty line.

^dNeeds help in 10 or more instrumental activities of daily living (IADLs), such as shopping or paying bills.

^e<200% poverty refers to incomes below 200% of the Federal poverty line.

* NHIS is National Health Interview Survey; PSU is primary sampling unit.

** The 2006 NHIS sample redesign included the partitioning of self-representing PSUs into smaller geographic areas (one or more counties) known as SPSUs or stratification PSUs. The number of PSUs shown for Panel 12 is comparable to the numbers associated with the earlier MEPS panels.

Source: Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality: Medical Expenditure Panel Survey.

Table 2a. Number of responding dwelling units, families, and persons, by year and panel.

MEPS Household Component Point-in-Time Files, 1996–2005

		Dwelling Units	Families	Persons
1996	Panel 01	8,793	9,388	23,612
1997	Combined	13,217	14,147	35,916
	Panel 01	8,035	8,613	21,411
	Panel 02	5,182	5,534	14,505
1998	Combined	8,816	9,597	24,454
	Panel 02	4,625	5,097	12,908
	Panel 03	4,191	4,500	11,546
1999	Combined	5,533	5,834	14,974
	Panel 04	5,533	5,834	14,974
2000	Combined	9,323	9,927	25,094
	Panel 04	4,990	5,362	13,546
	Panel 05	4,333	4,565	11,548
2001	Combined	12,598	13,393	34,173
	Panel 05	3,967	4,239	10,589
	Panel 06	8,631	9,154	23,584
2002	Combined	14,459	15,482	39,571
	Panel 06	7,952	8,625	21,620
	Panel 07	6,507	6,857	17,951
003	Combined	12,590	13,426	34,441
	Panel 07	5,959	6,403	16,413
	Panel 08	6,631	7,023	18,028
2004	Combined	12,782	13,664	34,797
	Panel 08	6,109	6,600	16,530
	Panel 09	6,673	7,064	18,267
2005	Combined	12,757	13,582	34,710
	Panel 09	6,074	6,562	16,514
	Panel 10	6,683	7,020	18,196

Source: Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality, Medical Expenditures Panel Survey

Table 2b. Number of responding dwelling units, families, and persons, by year and panel.

**MEPS Household Component Full-Year Files,
1996–2005**

		Dwelling Units	Families*	Persons
1996	Panel 01	8,095	8,588	21,571
1997	Combined	12,043	12,986	32,636
	Panel 01	7,366	7,925	19,622
	Panel 02	4,677	5,061	13,014
1998	Combined	8,318	8,920	22,953
	Panel 02	4,408	4,756	12,260
	Panel 03	3,910	4,164	10,693
1999	Combined	8,671	9,278	23,565
	Panel 03	3,639	3,925	9,979
	Panel 04	5,032	5,353	13,586
2000	Combined	8,849	9,437	23,839
	Panel 04	4,850	5,195	13,170
	Panel 05	3,999	4,242	10,669
2001	Combined	11,864	12,732	32,122
	Panel 05	3,836	4,114	10,298
	Panel 06	8,028	8,618	21,824
2002	Combined	13,689	14,712	37,418
	Panel 06	7,677	8,326	20,890
	Panel 07	6,012	6,386	16,528
2003	Combined	11,929	12,742	32,681
	Panel 07	5,771	6,147	16,000
	Panel 08	6,158	6,595	16,681
2004	Combined	12,043	12,917	32,737
	Panel 08	5,910	6,358	16,058
	Panel 09	6,133	6,559	16,679
2005	Combined	11,918	12,680	32,320
	Panel 09	5,832	6,278	15,904
	Panel 10	6,086	6,402	16,416

* Families defined by variable FAMID[yy] where FMRS1231 = 1.

Source: Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality, Medical Expenditures Panel Survey

Table 3a. Number of completed person-level interviews by age, sex, race/ethnicity, region, and MSA status (based on MEPS Point in Time files), MEPS 1996–2005

	1996	1997	1998	1999 ¹	2000	2001	2002	2003	2004	2005
Total	23,612	35,916	24,454	14,974	25,094	34,173	39,571	34,441	34,797	34,710
Age										
<1	360	566	367	200	376	514	558	518	511	519
1–17	6,532	10,298	7,162	4,219	6,987	9,459	11,453	10,188	10,082	10,118
18–24	2,133	3,194	2,204	1,308	2,230	3,125	3,610	3,179	3,268	3,243
25–44	7,230	10,530	7,003	4,449	7,228	9,773	11,151	9,560	9,650	9,432
45–64	4,707	7,224	4,925	3,149	5,400	7,440	8,524	7,286	7,501	7,676
65+	2,650	4,104	2,793	1,649	2,873	3,862	4,275	3,710	3,785	3,722
Sex										
Male	11,257	17,033	11,567	7,241	12,056	16,339	18,832	16,258	16,405	16,406
Female	12,355	18,883	12,887	7,733	13,038	17,834	20,739	18,183	18,392	18,304
Race/ethnicity										
Hispanic	4,872	7,884	5,526	3,583	6,098	8,022	9,990	9,253	9,520	9,585
Black	3,183	5,301	3,689	2,173	3,626	5,041	6,022	5,392	5,349	5,716
Asian	690	1,004	1,006	437	726	1,175	1,643	1,516	1,461	1,370
Other	14,867	21,727	14,233	8,781	14,644	19,935	21,916	18,280	18,467	18,039
Region										
Northeast	4,754	6,990	4,503	2,599	4,084	5,570	6,370	5,315	5,450	5,205
Midwest	5,101	7,578	4,913	3,030	5,203	7,093	7,729	6,628	6,642	6,610
South	8,196	12,592	8,867	5,496	9,295	12,551	14,924	13,297	13,745	13,514
West	5,561	8,756	6,171	3,849	6,512	8,959	10,548	9,201	8,960	9,381
MSA										
MSA	18,694	28,147	19,294	11,757	19,676	27,265	31,625	27,393	27,710	28,723
Non MSA	4,918	7,769	5,160	3,217	5,418	6,908	7,946	7,048	7,087	5,987

¹The 1999 PIT contains only one of the two panels.

Source: Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality, Medical Expenditures Panel Survey

Table 3b. Number of completed person-level interviews by age, sex, race/ethnicity, region, and MSA status (based on MEPS Full Year Files): MEPS-HC 1996–2005

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total	21,571	32,636	22,953	23,565	23,839	32,122	37,418	32,681	32,737	32,320
Age										
<1	321	406	270	266	291	383	455	431	426	424
1–17	5,965	9,330	6,569	6,551	6,595	8,774	10,599	9,512	9,353	9,217
18–24	1,884	2,919	2,154	2,095	2,119	3,010	3,462	3,080	3,072	3,041
25–44	6,478	9,332	6,412	6,727	6,680	8,869	10,273	8,877	8,819	8,559
45–64	4,374	6,661	4,753	5,107	5,244	7,228	8,296	7,053	7,303	7,362
65+	2,549	3,988	2,795	2,819	2,910	3,858	4,333	3,728	3,764	3,717
Sex										
Male	10,289	15,443	10,859	11,287	11,445	15,369	17,796	15,413	15,439	15,251
Female	11,282	17,193	12,094	12,278	12,394	16,753	19,622	17,268	17,298	17,069
Race/ethnicity										
Hispanic	4,638	7,542	5,585	5,852	5,936	7,637	9,427	8,866	9,022	8,990
Non-Hispanic	16,933	25,094	17,368	17,713	17,903	24,485	27,991	23,815	23,715	23,330
Black	2,907	4,815	3,430	3,239	3,471	4,699	5,570	5,094	4,991	5,260
Asian	582	829	597	635	602	987	1,304	1,349	1,311	1,227
Other	13,444	19,450	13,341	13,839	13,830	18,799	21,117	17,372	17,413	16,843
Region										
Northeast	4,275	6,278	4,159	4,031	3,746	5,063	5,840	4,843	4,912	4,734
Midwest	4,668	6,834	4,537	4,657	4,951	6,679	7,377	6,365	6,224	6,154
South	7,494	11,446	8,340	8,764	8,901	12,003	14,212	12,704	13,130	12,656
West	5,134	8,078	5,917	6,113	6,241	8,377	9,989	8,769	8,471	8,776
MSA Status										
MSA	16,791	25,185	17,897	18,325	18,556	25,451	29,723	25,827	26,777	26,572
Non MSA	4,592	7,127	4,817	5,038	5,283	6,671	7,695	6,854	5,960	5,748
Missing	188	324	239	202	-	-	-	-	-	-

Source: Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality, Medical Expenditures Panel Survey

Table 4. Example sample size and response rates - Full Year (Panel 7, Rounds 1–3 combined with Panel 6, Rounds 3–5): MEPS 2002

	Panel 6	Panel 7
A. Percentage of NHIS households designated for use in MEPS (those initially characterized as responding)	89.9%	89.7%
B. Number of households sampled from the NHIS	10,704	8,132
C. Number of Households sampled from the NHIS and eligible and fielded for MEPS	10,651	8,083
D. Round 1 – Number of RUs* eligible for interviewing	11,556	8,710
E. Round 1 – Number of RUs with completed interviews	9,377	7,008
F. Round 2 – Number of RUs eligible for interviewing	9,666	7,197
G. Round 2 – Number of RUs with completed interviews	9,222	6,802
H. Round 3 – Number of RUs eligible for interviewing	9,380	6,937
I. Round 3 – Number of RUs with completed interviews	9,001	6,673
J. Round 4 – Number of RUs eligible for interviewing	9,117	NA
K. Round 4 – Number of RUs with completed interviews	8,843	NA
L. Round 5 – Number of RUs eligible for interviewing	8,892	NA
M. Round 5 – Number of RUs with completed interviews	8,781	NA
P6: $A \times (E/D) \times (G/F) \times (I/H) \times (K/J) \times (M/L)$ P7: $A \times (E/D) \times (G/F) \times (I/H)$	64.0% (Panel 6 through Round 5)	65.6% (Panel 7 through Round 3)
Overall combined response rate: 0.55 x P6 response rate + 0.45 x P7 response rate	64.7%	

* RU is Reporting Unit.

Source: Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality: Medical Expenditure Panel Survey.

Table 5. MEPS Individual Panel and Combined Annual Response Rates

Response Rate (%)				
Calendar Year	Year 2 Panel	Year 1 Panel	Adjustment Factors (Year 2, Year 1)	Combined Overall
1996	na	70.66	na	71.0
1997	64.06	69.49	na	66.8
1998	65.72	69.02	na	67.4
1999	65.88	66.14	na	66.0
2000	63.68	68.27	(0.55, 0.45)	65.7
2001	65.42	66.81	(0.33, 0.67)	66.3
2002	63.99	65.60	(0.55, 0.45)	64.7
2003	62.91	65.93	(0.49, 0.51)	64.5
2004	62.66	63.50	(0.49, 0.51)	63.1

Source: Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality: Medical Expenditure Panel Survey

– na is 'not applicable'.