A COMPARISON OF SURVEY METHODOLOGIES AND THEIR EFFECTS ON HEALTH CARE UTILIZATION ESTIMATES

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Introduction

The 1996 Medical Expenditure Panel Survey (MEPS) is the third in a series of nationally representative surveys of medical care use and expenditures sponsored by the Agency for Health Care Policy and Research (AHCPR). While the survey is unparalleled in the degree of detailed data collected that can be used for complex behavioral analyses, an important objective of MEPS is to produce descriptive estimates of health care use, expenditures, sources of payment, and insurance coverage for the U.S. civilian noninstitutionalized population. As part of the quality control process in preparing selected 1996 MEPS data for public release in June 1998, AHCPR compared MEPS estimates on health care use to similar estimates obtained from other national surveys. These surveys include the National Health Interview Survey, National Hospital Discharge Survey, National Health Care Survey, and the Medicare Current Beneficiary Survey. This paper describes the results of comparisons for selected estimates that are relevant to current health policy considerations, with particular emphasis on methodological issues such as period of recall, sampling unit, and mode of collection that may have produced the observed differences in estimates among surveys.

Overview of Survey Methodologies

Medical Expenditure Panel Survey

The MEPS is comprised of four component surveys that are integrated by design: the Household Component, the Medical Provider Component, the Insurance Component, and the Nursing Home Component. The Household Component serves as the core survey from which the Medical Provider Component sample and part of the Insurance Component sample are based. These are supplemented by the Nursing Home Component. Together, these surveys yield comprehensive data that provide national estimates of the level and distribution of health care use and expenditures, support health services research, and assess health care policy implications.

Data for this report are derived from the MEPS Household Component (HC), a nationally representative survey of the U.S. civilian noninstitutionalized population which collects medical expenditure data at both the person and household level. The focus of the MEPS-HC is to collect detailed data on demographic characteristics, health conditions, health status, use of medical care services, charges and payments, access to care, satisfaction with care, health insurance coverage, income, and employment.

The sampling frame for the MEPS-HC is drawn from a nationally representative subsample of the households that participated in the 1995 National Health Interview Survey (NHIS). This NHIS subsample consisted of 195 primary sampling units and approximately 1700 segments yielding approximately 10,500 households responding to the NHIS. The NHIS subsample reflects an oversample of Hispanics and blacks to improve the precision of the estimates for those groups.

The MEPS collects data from this sample of households through an overlapping panel design. In this design, data are collected through a precontact interview followed by a series of five rounds over a 2 ½ year period of time. Two calendar years of medical expenditure and utilization data are collected from each household and is captured using computer assisted personal interviewing (CAPI). This series of data collection rounds is launched again each subsequent year on a new sample of households drawn from the NHIS sampling frame to provide overlapping panels of survey data, which then combine with other ongoing panels to provide continuous and current estimates of health expenditures. For a detailed description of the survey and sample designs see Cohen, 1997 and Cohen, 1996.

The data used in this report are based on the full year health care utilization estimates for 1996. These utilization estimates are a composite of health care use reported in Rounds 1 and 2, and Round 3 utilization until December 31, 1996. Therefore, "full year" health care utilization refers to all care received between January 1, 1996 and December 31, 1996. Over the course of Rounds 1 through 3, the household component had a full year response rate of 70.2 percent (which includes the response rate for the NHIS). Utilization estimates are calculated for household

members who were eligible for the interview any time during 1996. This yielded a sample of 21,571 persons.

National Health Interview Survey

The National Health Interview Survey (NHIS) is a continuing nationwide sample survey in which data are collected through personal household interviews. The sample design of the NHIS follows a multistage probability design that permits a continuous sampling of the civilian noninstitutionalized population residing in the United States. The survey is designed in such a way that the sample scheduled for each week of the survey is representative of the target population and the weekly samples are additive over time. In 1995 the NHIS consisted of 358 primary sampling units and there was an oversample of both black and Hispanic populations to improve the precision of statistics. The expected sample of 44,000 occupied respondent households yielded a probability sample of approximately 102,000 persons. For a detailed description of the survey design see Massey, et al (1989).

National Health Care Survey

The National Health Care Survey (NHCS), conducted by the NCHS, measures health care utilization across a variety of providers. Two components of the NHCS were used in this report, the National Medical Ambulatory Care Survey (NAMCS) and the National Hospital Ambulatory Medical Care Survey (NHAMCS). Both surveys use a multistage probability sample design, for details of the survey design see Woodwell, 1997 and McCaig and Stussman, 1997. In the NAMCS, sample physicians were asked to complete Patient Record forms (PRF) for a systematic random sample of office visits occurring during a randomly assigned 1-week reporting period. The scope of the survey covers physician-patient encounters in the offices of nonfederally employed physicians classified by the American Medical Association or the American Osteopathic Association as "office-based, patient care" physicians. Patient encounters with prepaid practices (e.g., HMOs or IPAs) are included in the NAMCS. Excluded are visits to hospital-based physicians, visits to specialists in anesthesiology, pathology, and radiology, and visits to physicians who are principally engaged in teaching, research, or administration. Telephone visits and non-office visits are excluded, also. For the 1996 survey, a sample of 2,142 physicians was selected. The physician response rate was 70.0 percent providing data on 29,805 patient records. The estimation procedure used in NAMCS basically has

three components: inflation by the reciprocal of the probability of selection, adjustment for nonrespsonse, and ratio adjustment to fixed totals.

For the NHAMCS, hospital staff were asked to complete PRFs for a systematic random sample of patient visits occurring during a randomly assigned 4-week period. The sample consisted of visits by patients to emergency room departments (EDs) and outpatient departments (OPDs) of non-Federal, short-stay, or general hospitals. Telephone contacts are excluded. For the 1996, survey 436 hospitals participated. The overall response rate was 95 percent, with 392 EDs providing 21,9202 PRFs, and 235 OPDs completing 29,806 PRFs.

National Hospital Discharge Survey

The National Hospital Discharge Survey (NHDS) is also a continuing nationwide sample survey of short-stay hospitals in the United States. Data are collected from a sample of inpatient records acquired from a national probability sample of hospitals. Persons with multiple discharges during the year may be sampled more than once, resulting in estimated for discharges, not persons. Only hospitals with an average length of stay of fewer than 30 days for all patients, general hospitals, or children's general hospitals are included in the survey. Federal, military, and Department of Veterans Affairs hospitals, as well as hospital units of institutions (such as prison hospitals), and hospitals with fewer than six beds staffed for patient use, are excluded. Hospitals with 1,000 beds or more, or 40,000 discharges or more annually were included in the sample with certainty. The remaining sample of hospitals was based on a stratified three-stage design. Two data collection procedures were used for the survey. One was a manual system in which the sample selection and transcription of information from hospital records was performed by either hospital or survey staff. The other data collection procedure was an automated system, in which NCHS purchased tapes containing the required medical record data from various organizations. The records from these tapes were systematically sampled. In 1995, 525 hospitals were selected, 502 were within scope, 466 participated in the survey, and 263,000 medical records were abstracted. Detailed information about the sample design and the magnitude of sampling errors can be found in Graves and Owings (1996).

Medicare Current Beneficiary Survey

The Medicare Current Beneficiary Survey (MCBS) is a continuous, multipurpose survey of a

representative sample of the Medicare population, conducted by the Office of the Actuary, Health Care Financing Administration (HCFA). The target population consists of aged and disabled beneficiaries enrolled in Medicare Part A or Part B, or both residing in households or long-term care facilities. The sample persons were selected from Medicare enrollment files to be representative of the Medicare population. The sample was selected using a stratified, multistage area probability sample design. For details on survey and sample designs, see Laschober and Olin, 1996. In 1995, data were collected from 12,777 beneficiaries, approximately 92 percent lived in the community for the entire year.

Results

The medical event types selected for this report include ambulatory care in both office-based and hospital-based settings, hospital discharges, and selected events for Medicare beneficiaries.

Office-based Physician Visits

Survey	Estimate(1000s)	Difference	RSE
MEPS (1996)	898,879	--	.028
NHIS (1995)	874,297	+ 3%	.018
NAMCS (1996)	734,493	+22%	.044

The NHIS was designed so that the sample schedule for each week is representative of the target population and weekly samples are additive over time. Respondents are interviewed once and ambulatory care is based on a 2-week recall question that is inflated into an annual estimate. For the MEPS, respondents were provided a calendar during a precontact visit to record all medical and dental events for the entire family for calendar year 1996. MEPS medical event data were collected at three points in time. Despite differences in methods there was no significant difference the number of office-based physician visits between the NHIS and the MEPS. However, both MEPS and NHIS estimates for office-based physician visits are significantly higher than estimates derived from the NAMCS, which collects data directly from providers during a random 1week period. While some of this difference occurs because the NAMCS covers visits to doctor's offices only and excludes visits to non-hospital based clinics such as occupational health clinics or free-standing clinics, it is also possible that MEPS and NHIS respondents may be misclassifying visits to non-physicians (such as optometrists or chiropractors) as

physician visits.

Ambulatory Hospital Visits
(Includes Emergency Room and Outpatient)

Survey	Estimate(1000s)	Difference	RSE
MEPS(1996)	173,861	--	.043
NHIS (1995)	197,124	-12%	.037
NHAMCS (1996)	157,533	+10%	.047

MEPS estimates for ambulatory hospital visits, which include visits to emergency rooms and outpatient clinics are slightly lower than NHIS estimates and slightly higher than NHAMCS estimates. Furthermore, the target universe of the NHAMCS differs from both the MEPS or the NHIS. The NHAMCS sample excludes clinics with only ancillary servies, regardless of whether or not the person saw a physician at the time of the visit. The NHAMCS also excludes ambulatory surgery centers and Federal hospitals such as military or VA hospitals. All of these factors would be consistent with lower NHAMCS estimates compared to either the MEPS or the NHIS. MEPS and NHIS respondents may also be misclassifying the setting in which they received care.

Hospital Discharges

Survey	Estimate(1000s)	Difference	RSE
MEPS (1996)	27,544	--	.041
NHIS (1995)	27,506	+0.1%	.017
NHDS (1995)	34,353	-20%	.038

Hospital discharge estimates for the MEPS and the NHIS are comparable. While MEPS respondents were asked about hospital inpatient events that occurred during 1996 at three points in time, NHIS respondents were asked to recall inpatient events for the entire year during a single interview. NHIS estimates, however, are based on a six month reference period and are inflated to an annual estimate. Despite these different methodologies hospital discharge estimates are comparable between the two surveys, which suggests that hospitalizations are not subject to significant recall error over a 12 month period. However, both the MEPS and the NHIS estimates are significantly lower than the NHDS. Since the sampling unit for the NHDS is the hospital, a small part of this difference is attributable to the NHDS including patients admitted from institutions, while the MEPS and NHIS samples exclude the institutionalized population. However, a

larger portion of the difference is probably accounted for in ambulatory surgical settings where persons are frequently admitted, usually to a hospital, and discharged the same day. Preliminary review of the Medical Provider Component data suggests that respondents are classifying same day discharges (or zero-night stays) as outpatient events whereas the NHDS includes these events as discharges. It should be noted that some births that occurred in hospitals are not reported as discharges in MEPS, this would have a downward effect on MEPS estimates for hospital discharges.

Average Length of Hospital Stays*

Survey	Estimate(nights)	RSE
MEPS (1996)	5.7	.060
NHIS (1995)	5.7	.086
NHDS (1995)	5.4	.074

*MEPS and NHDS counts 0 night stays as 1 night.

Even though it is suspected that respondents are misclassifying same-day discharges as outpatient events, there is no observable effect on the average length of stay among the three surveys.

Noninstitutionalized Medicare Population

Selected Services	MEPS (1996)	MCBS (1995)
Home Health Visit(s)	12.3%	13.4%
Inpatient Stay(s)	18.3%	18.2%
Dental Visit(s)	40.6%	39.6%
Prescribed Medicines	87.3%	86.6%

The MCBS is similar to the MEPS insofar as data are collected by CAPI interview at three points in time during the year. For the noninstitutionalized population 65 and older, there were no significant differences on selected measures, including the percentage of persons having at least one home health visit, one inpatient stay, one dental visit, or obtaining one prescribed medicine during 1996.

Summary

The Medical Expenditure Panel Survey enumerates all health events in a calendar year through three CAPI interviews. Despite differences in survey design, including period of recall and sampling unit, estimates are generally comparable to other surveys.

Results presented in this report suggest respondents may have difficulty in accurately classifying medical events by provider type and event setting. Data from the MEPS Medical Provider Component will provide more insight about the types and extent of misclassifications by survey respondents.

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Note: The views expressed in this paper are those of the authors and no official endorsement by the DHHS or AHCPR is intended or should be inferred. Copies of the tables,sources referenced, and detailed specifications for tables shown in this paper can be obtained by contacting Nancy A. Krauss.