

# Out-of-pocket health care expenditures: a comparison

*An examination of aggregate out-of-pocket health care expenditures from the CE, MEPS, and the NHEA for the 1996–2006 period indicates that methodological differences account for the lack of agreement among estimates*

Ann C. Foster

**H**ealth care expenditure data produced by the Federal Government come from a variety of data sources, including the Bureau of Labor Statistics (BLS) Consumer Expenditure Survey (CE), the household component of the Medical Expenditure Panel Survey (MEPS-HC) of the Department of Health and Human Services (DHHS) Agency for Healthcare Research and Quality, the National Health Expenditure Accounts (NHEA) of the DHHS Centers for Medicare and Medicaid Services, and the Personal Consumption Expenditures (PCE) of the Bureau of Economic Analysis (BEA). The purpose of this article is to examine annual aggregate CE, MEPS, and NHEA out-of-pocket health care expenditures for comparable categories from 1996 to 2006 to determine whether they are consistent across the three data sources.<sup>1</sup>

The CE collects information about out-of-pocket spending on health care and other expenses from consumer units<sup>2</sup> throughout the United States. The MEPS-HC collects nationwide data on the cost and use of health care and on health insurance coverage at the household and the individual level.<sup>3</sup> The NHEA are the official estimates of total health care spending in the United States. The NHEA measure aggregate an-

nual expenditures for health care goods and services, public-health activities, program administration, and research and other investment related to health care, as well as the net cost of private insurance. The PCE measure the market value of health care and other goods and services purchased by the “personal sector” of the U.S. Census Bureau’s National Income and Product Accounts. Data for the NHEA and the PCE are obtained from secondary sources. Although health insurance premiums are a major part of household health care spending, they will not be examined in this article because the MEPS data that were used did not provide the information needed for the research undertaken.

The first section of the article compares and contrasts the content and methodology of the CE, MEPS, and NHEA. The next section describes the methods to be used subsequently to carry out the comparison, including spending category alignment, population adjustment, and expenditure computation. Then, the relevant findings from the analysis are presented and examined, followed by conclusions and implications.<sup>4</sup>

## Consumer Expenditure Survey

Conducted continuously since 1980, the CE has two components: a quarterly Interview Survey and a weekly Diary Survey. Each com-

Ann C. Foster is an economist in the Division of Consumer Expenditure Surveys, Office of Prices and Living Conditions, Bureau of Labor Statistics. E-mail: foster.ann@bls.gov

ponent queries an independent sample of consumer units designed to be representative of the U.S. civilian noninstitutionalized population.<sup>5</sup> The CE collects information not just on health care expenditures, but on all spending components, including food, housing, apparel and services, transportation, and entertainment. Data are collected on an ongoing basis in 91 areas of the country.

CE data are used in various ways, one of which is in the periodic revision of the BLS Consumer Price Index (CPI). CE data form the basis of the selection of new market baskets of goods and services for the CPI, determine the relative importance of CPI components, and are used to derive new cost weights for the market baskets.<sup>6</sup>

CE data are collected by the U.S. Census Bureau under contract with the BLS. The Interview Survey is designed to collect spending information that usually can be remembered after 3 or more months. Included is information about fairly large expenditures, such as major appliances, and those which occur regularly, such as rent or health insurance premiums. Also included is information on expenses for reimbursements for medical care costs that are not collected in the Diary Survey. Interview Survey respondents are interviewed every 3 months for a total of five interviews. Information on spending (net of any reimbursements) is collected from respondents in the second through fifth interviews, by means of uniform questions. About 7,000 consumer units are interviewed each quarter.

Although the Diary Survey is designed to obtain information about small, frequently purchased items, such as food and personal care products, that are hard to remember over long periods, it is not limited to these expenses. With few exceptions, all expenses a consumer unit incurs during a survey week are recorded in a self-administered diary. Health care expenditures collected only in the Diary Survey are repair of medical equipment, nonprescription drugs, nonprescription vitamins, and topicals and dressings. About 7,000 consumer units are sampled annually for the Diary Survey, with each consumer unit completing two consecutive 1-week diaries, yielding around 14,000 diaries a year.<sup>7</sup>

Data from the Diary and Interview Surveys are combined to provide a more complete picture of consumer expenditures and income that neither component alone is designed to do. Most of the published health care expenditures are obtained from the Interview Survey; however, there is considerable overlap in item coverage between the two surveys. Thus, the problem of determining the best survey component from which to select expenditure items must be addressed. When overlap occurs, the more

reliable of the two estimates is determined by statistical methods.<sup>8</sup> Integrated CE data will be used in the analysis that follows, for a more complete picture of out-of-pocket health care spending.

## Medical Expenditure Panel Survey

The MEPS-HC, which began in 1996, is a household-based survey that contains individual and household-level estimates of health care expenditures and use, health insurance coverage, and a wide range of other health-related and socioeconomic characteristics.<sup>9</sup>

MEPS data are used for policy-related and behavioral research on the determinants of health care use, spending, and insurance coverage. The Federal Government uses MEPS data to prepare national estimates of health care use and spending, private and public health insurance coverage, and the availability, cost, and scope of private health insurance benefits for the U.S. population and for subgroups of policy interest.<sup>10</sup>

With the use of an overlapping panel design, MEPS-HC data are collected from a sample that is selected to be representative of the U.S. civilian noninstitutionalized population. Data are collected at the household and the individual level. In 2006, for example, data were collected from 12,811 families in order to obtain information on 32,577 individuals. Each year, a new panel of households is selected from those that participated in the previous year's National Health Interview Survey conducted by the National Center for Health Statistics of the DHHS. For each panel, 2 years of data are collected in five in-person interviews over 2½ years.<sup>11</sup>

Each of the five interview rounds of the MEPS-HC contains core component questions that request information about demographic characteristics; charges and payments by source (household, private insurance, Medicare, Medicaid, and so forth); health status; medical conditions; utilization data for hospital visits, physicians' services, home health care, and prescription drugs; public and private health insurance coverage; and employment status. Rounds 2 and 4 have supplemental sections to elicit information about access to care, child preventive health care, and satisfaction with health plans and providers. Rounds 3 and 5 have supplemental sections requesting information on income, preventative health care, and priority conditions, while information on assets is requested in round 5 only. Unlike the CE, which collects data on the consumer unit only, the MEPS-HC collects data on individual household members.<sup>12</sup>

The medical provider component of MEPS (MEPS-MPC) supplements and validates information reported

in the MEPS-HC by means of telephone interviews with, and survey materials mailed to, medical providers and pharmacies reported by HC respondents. The MPC sample includes hospitals and hospital-based physicians, home health care agencies, office-based physicians, and pharmacies. Information about dates of visits, diagnosis and procedure codes, charges, and payments is collected from all medical providers. The MPC pharmacy component collects detailed information on drugs, including the National Drug Code, name of the medicine, date filled, and sources and amounts of payments. MPC data are used to replace expenditure data reported by HC respondents with data reported by their providers, because the latter data generally are more complete and less prone to reporting errors. MPC data also are used as an imputation source for item nonresponse in order to reduce the level of bias in survey estimates of medical expenditure.<sup>13</sup>

Methodological differences between the CE and MEPS could produce low CE-MEPS ratios. One factor is that, as mentioned in the previous paragraph, the MEPS-MPC uses provider data to verify respondent data for hospital, physician, and prescription drug spending, while the CE relies on respondent data only. The nature of the MEPS interview also could play a part because respondents are asked about health conditions and associated treatments, as well as related expenses, for all household members. This format could increase respondents' recall of expenditures, compared with the CE practice of asking about total consumer unit out-of-pocket expenses only. CE respondents provide information about outlays on food, housing, transportation, entertainment, and more, in addition to health care, further complicating their recall of expenditures.

## National Health Expenditure Accounts

Dating back to 1960, the NHEA are compiled to measure aggregate health care spending and to provide a way to examine the relationship between payers and providers of goods and services over time. The NHEA cover a larger population than the CE and MEPS, because all persons, military and civilian, living in the United States are considered part of the resident population.<sup>14</sup>

NHEA data provide valuable information on health care spending as a proportion of the gross domestic product (GDP), on changes over time in expenditures for types of goods and services and in sources of funds, and on health care spending projections. NHEA data also provide specialized historical estimates of spending by age and State, along with estimates by sponsor (businesses, households, and government) of health care.<sup>15</sup>

The NHEA use many secondary data sources. For hospital care, the basic data sources are the American Hospital Association's Annual Survey and the Census Bureau's Services Annual Survey (SAS); Federal hospital estimates are based on data from the Federal agencies that administer them. Data sources for physician and clinical services, dental services, and other professional services include the Census Bureau's SAS and Census of Service Industries, as well as data from the BLS Current Employment Statistics, Consumer Price Index, and Producer Price Index programs. Data sources for the NHEA home health care component include SAS and the Census of Service Industries for private establishments; for government-owned home health care agencies, the NHEA derive their estimates from Medicare data.<sup>16</sup>

In the NHEA, the categories of prescription drugs, other nondurable medical products, and durable medical equipment include products purchased or leased from retail outlets or through mail order only. Expenditures made in connection with hospital care, nursing home care, or a professional visit are included in the estimates for those providers' services. However, optical goods, such as eyeglasses and contact lenses, are included in durable medical equipment instead of with optometrists' receipts.

Through 2002, the NHEA used detailed data from the Census Bureau's Census of Retail Trade to estimate prescription drug spending. Estimates for subsequent years are prepared by extrapolating the 2002 levels with IMS Health, Inc., data on retail and wholesale purchases.<sup>17</sup>

Estimates for other nondurable medical products (nonprescription drugs and medical sundries) and for durable medical products (for example, eyeglasses, hearing aids, and medical equipment) are benchmarked to the national Input-Output (I-O) tables produced by the BEA in years ending in 2 and 7. The nonprescription drug estimate is interpolated between I-O years and extrapolated to recent periods on the basis of retail sales data from Kline & Company; for medical sundries, detailed Personal Consumption Expenditure data from the BEA's National Income and Product Accounts are used. From 1987 through 2007, private (nongovernment) spending estimates for durable medical equipment were prepared by interpolating between, and extrapolating from, adjusted I-O levels, using CE data, adjusted and distributed National Medical Expenditure Survey or MEPS data. For 2008, durable medical equipment expenditures were prepared by using the historical relationship of CPI for eyeglasses and eye care, real GDP, and current population data combined with public data sources.<sup>18</sup>

The NHEA estimate sources of payment as follows for a majority of the personal health expenditure sectors de-

scribed in the preceding paragraphs: government spending for both Federal Government programs and State and local government programs is calculated. Private spending (out-of-pocket spending; private health insurance; and other private sources, such as philanthropy) is calculated as personal health care expenditures minus government expenditures. The NHEA allocation of private expenditures across out-of-pocket, private health insurance, and other private sources is determined from numerous data sources.<sup>19</sup> The way in which the NHEA allocate health care expenditures across categories will influence CE-NHEA ratios compared with ratios computed under alternative assumptions. The exact impact of the NHEA assumptions on these categories, however, cannot be determined from available data.

In the NHEA, out-of-pocket spending for health care consists of direct spending by consumers. This estimate includes the amount spent for health care goods and services not covered by insurance and for coinsurance and deductibles (including provider payments covered by Health Savings Accounts) required by private insurance and by public programs such as Medicare and Medicaid.<sup>20</sup>

## Health care categories

Because each data source categorizes health care expenditures differently, a comparison of the categories helps in constructing research variables with the greatest possible alignment across the three sources. Exhibit 1 summarizes expenditure categories and other differences among them.

*Inpatient hospital care.* The CE collects information on spending for inpatient hospital rooms and services provided by facilities such as general-care hospitals, psychiatric hospitals, substance abuse hospitals, and birthing centers. MEPS also collects information on spending for inpatient hospital facilities, but excludes charges for hospital-based nursing home care, skilled nursing facilities, and intermediate care facilities for those with intellectual disabilities. Hospital stays of 45 or more days also are out of scope for MEPS, whereas hospital-based home health care is included in the home health care category.

In the NHEA, the type of product consumed or the type of establishment providing a service determines what is included in a spending category. Thus, hospital expenses cover all services provided by hospitals, including room and board, operating room fees, resident physician fees, prescription drugs, hospital-based nursing home care, and hospital-based home health care.<sup>21</sup> In contrast to the CE and MEPS, the NHEA do not distinguish between inpatient, outpatient, and emergency room care. All U.S.

hospitals are within the scope of the NHEA.

*Laboratory tests and x rays.* The CE collects information on laboratory tests and x rays received neither as a hospital inpatient nor in connection with eye and dental care. MEPS places these expenses into several categories, including emergency room facilities charges, outpatient facilities charges, and office visits. Medical laboratory services billed directly from medical and diagnostic laboratories are part of the “other professional services” category.

The NHEA include laboratory tests and x rays in with the charges of the establishment providing the service. Laboratory tests and x rays provided by hospitals on an inpatient, outpatient, or emergency room basis are part of the hospital care category. Charges for laboratory tests and x rays also are included in physician and clinical services spending. Establishments in this category include offices of physicians (NAICS 62111) and outpatient care centers, such as health maintenance organizations (NAICS 6214). Medical laboratory services billed directly from medical and diagnostic laboratories (NAICS 62151) also are included in the physician and clinical services category.

*Other medical care services.* In the CE, outpatient hospital care, emergency room services, and ambulance services are part of the “other medical services” category. MEPS has separate categories for outpatient and emergency room facilities charges, while ambulance services are part of the “other medical equipment and services” category. The NHEA include outpatient hospital care and emergency room services in the hospital care category. Ambulance services are not included in consumer outlays for health care, but ambulance services reimbursed by Medicare are included in “other professional services.”

*Physicians’ services.* CE respondents are asked to give information about all services provided and billed by physicians. Information about whether these services were related to hospital care, an office visit, or a home visit is not requested. MEPS classifies separately billed physician charges by whether they were made in connection with an inpatient hospital stay, outpatient hospital care, hospital emergency room treatment, or an office visit. Besides obtaining this information from respondents, MEPS requests additional verification from providers.

In the NHEA, spending on the services of physicians, dentists, and other medical professionals is categorized by the establishment providing the service. The NHEA physician and clinical services category covers spending on services provided by offices of physicians (NAICS 62111)



**Exhibit 1. Comparison of the Consumer Expenditure Survey, Medical Expenditure Panel Survey, and National Health Expenditure Accounts**

Category	Consumer Expenditure Survey	Medical Expenditure Panel Survey	National Health Expenditure Accounts
Population represented	U.S. civilian noninstitutionalized population.	U.S. civilian noninstitutionalized population.	U.S. resident population plus net undercount.
Databases	Data based on expenditures classified by type of service, regardless of medical event leading to expenditure.	Data based on event-level expenditures classified by type of service.	Data based on estimates of revenues received by providers, classified by type of establishment.
Data sources	Information from Interview and Diary Survey respondents. Information for each service is the total for all consumer unit members.	Information provided for each event leading to an expenditure. Survey estimates at individual and household level. Information obtained by interview, with information on hospital services, hospital-based physicians, home health agencies, office-based physicians, and pharmacies verified by providers.	Aggregate data from secondary sources. Includes information from Federal agencies administering public programs such as Medicare and Medicaid; the Annual Survey of the American Hospital Association; and the Census Bureau's Service Annual Survey, Census of Service Industries, and Census of Retail Trade.
Inpatient hospital care	Includes spending for inpatient hospital rooms and services from facilities such as general-care hospitals, psychiatric hospitals, substance abuse hospitals, and birthing centers.	Information on inpatient hospital facilities charges. Excludes charges for hospital-based nursing home care, skilled-nursing facilities, and intermediate care facilities for those with intellectual disabilities. Hospital stays of 45 days or more are out of scope. Hospital-based home health care part of home health care category.	Hospital care category includes charges for all services provided by hospitals, including inpatient, outpatient, and emergency room services; prescription drugs; and hospital-based nursing home and home health care.
Laboratory tests and x rays	Spending for laboratory tests or x rays not received as a hospital inpatient or in connection with eye and dental care.	Included in outpatient facilities charges, emergency room facilities charges, and office-based visits categories. Medical laboratory services billed directly from medical and diagnostic laboratories are in the "other professional services" category.	Usually included in the charges of the establishment providing the service. Part of hospital care category if provided by hospitals on an inpatient, outpatient, or emergency room basis. Part of physician and clinical services category if billed by physician's office or outpatient care center. Also in physician and clinical services category if billed directly by laboratory.
Other medical care services	Includes outpatient hospital care, emergency room services, and ambulance services.	Included in outpatient facilities charges and emergency room facilities charges. Ambulance services part of "other medical equipment and services" category.	Outpatient hospital care and emergency room services charges included in hospital care category. Out-of-pocket spending for ambulance services not included.
Physicians' services	Includes all services provided and billed by physicians.	Separately billed physicians' charges collected for hospital inpatient, outpatient, and emergency room care and office visits.	Spending for physicians' services categorized by the establishment providing the service. Physician and clinical services category includes services by physicians' offices and freestanding outpatient care centers. Physicians' charges also included in hospital care, nursing home care, and home health care categories.
Other professional services	Services provided by other medical professionals except physicians, dentists, and optometrists. Includes services provided both inside and outside the home.	Services by medical professionals except physicians and dentists. Information collected in connection with outpatient hospital care and office visits. In-home care included in home health care category. Independently billed lab tests also included in this category.	Services of professionals (other than physicians or dentists) in independent practice (NAICS 6213) included in "other professional services" category. Services of other professionals also included in hospital care, physicians and clinical services, home health care, nursing home care, and dental services categories.

<b>Exhibit 1. Continued—Comparison of the Consumer Expenditure Survey, Medical Expenditure Panel Survey, and National Health Expenditure Accounts</b>			
<b>Category</b>	<b>Consumer Expenditure Survey</b>	<b>Medical Expenditure Panel Survey</b>	<b>National Health Expenditure Accounts</b>
Dental services	Dental care, such as examinations, cleaning, bridges, crowns, dentures, orthodontia, root canals, and x rays.	Includes services of general dentists, dental hygienists, technicians, and surgeons; orthodontists; endodontists; and periodontists.	Dental services category includes services provided by offices of dentists (NAICS 6212). Independently practicing denturists and dental hygienists included in “other professional services” category.
Eye care services	Eye examinations, treatments, or surgery. Does not distinguish between optometrists, who perform eye examinations and basic treatments, and ophthalmologists, who perform surgery and may also prescribe eyeglasses or contact lenses.	Services of optometrists included in “other professional services.” Services of ophthalmologists included in physicians’ charges.	See “other professional services” category for treatment of optometrists’ charges and physicians’ services category for treatment of ophthalmologists’ charges.
Eyeglasses and contact lenses	Spending for eyeglasses and contact lenses.	Included in “other medical equipment and services” category.	Retail purchases of eyeglasses and contact lenses included in durable medical equipment category. Items obtained from other providers included in spending for those providers’ services.
Prescription drugs	All prescribed medicines not connected with an inpatient hospital stay. Insulin included in prescription drugs; diabetic supplies in medical equipment for general use.	Prescribed medicines obtained from retail outlets, in health maintenance organization/clinic/hospital pharmacies, by mail order, and online. Includes diabetic supplies and insulin.	Limited to items obtained from retail outlets or by mail order. Insulin syringes included in “other nondurable medical products” category.
Other nondurable medical products	Separate categories for nonprescription drugs, nonprescription vitamins, and topicals and dressings. Collected from Diary Survey respondents only.	No estimates for nonprescription, nondurable goods.	Retail purchases of items in the three categories included in “other nondurable medical products” category. Items obtained from other providers included in spending for those providers’ services.
Repair of medical equipment	Classified as a medical service. Information obtained from Diary Survey respondents only.	All medical equipment spending included in “other medical equipment and services” category.	Included in durable medical equipment category. Services obtained from other providers included in spending for those providers’ services.
Hearing aids	Purchase of hearing aids.	Included in “other medical equipment and services” category.	Included in durable medical equipment category. Services obtained from other providers included in spending for those providers’ services.
Supportive or convalescent medical equipment	One category for purchase, one category for rental. Includes items such as crutches, wheelchairs, and Ace bandages.	All medical equipment included in “other medical equipment and services” category.	Some retail purchases and rentals included in durable medical equipment category; other retail purchases and rentals included in “other nondurable medical products” category. Items obtained from other providers included in spending for those providers’ services.
Medical equipment for general use	One category for purchase, one category for rental. Includes items such as ice bags, thermometers, heating pads, sun lamps, and insulin needles.	Diabetic supplies included in prescription drugs category; other items included in “other medical equipment and services” category.	Some retail purchases and rentals included in durable medical equipment category; other retail purchases and rentals included in “other nondurable medical products” category. Items obtained from other providers included in spending for those providers’ services.

**Exhibit 1. Continued—Comparison of the Consumer Expenditure Survey, Medical Expenditure Panel Survey, and National Health Expenditure Accounts**

Category	Consumer Expenditure Survey	Medical Expenditure Panel Survey	National Health Expenditure Accounts
Nursing home care	All services provided and billed by a convalescent or nursing home.	Not included.	Services provided by freestanding nursing home facilities.
Home health care	No specific category. Some charges might be included in other categories.	Care provided by home health care agencies and independent providers. Agency data verified by provider. Nonagency data collected once a year from households.	Medical care in the home provided by non-facility-based home health care agencies. Medical equipment sales or rentals not billed through agency and nonmedical care. (For example, chore worker or custodial services and Meals on Wheels are excluded.)
Health insurance	Premiums paid for private health insurance obtained individually or through a group plan. Premiums paid to the Medicare Supplementary Medical Insurance (SMI) Trust Fund (Part B, C, and D coverage). Amounts paid to the Medicare Hospital Insurance (HI) Trust Fund (Part A coverage) are treated as deductions from income for Social Security.	Premiums paid for private health insurance, excluding long-term care insurance, obtained individually or through a group plan. Data available for 2001–06 only. Information on premiums paid to the Medicare SMI and HI Trust Funds is not requested.	Premiums paid for private health insurance, including long-term care insurance, obtained individually or through a group plan. Unlike the Consumer Expenditure Survey and the Medical Expenditure Panel Survey, the National Health Expenditure Accounts include the portion of property and casualty insurance premiums covering health care in private health insurance. Premiums paid to Medicare SMI and HI Trust Funds.

and outpatient care centers (NAICS 6214). The category also includes medical laboratory services billed directly from medical and diagnostic laboratories (NAICS 62151).

Spending on the services of a professional whose salary is paid by a hospital, nursing home, or other health establishment is reported together with spending on the relevant establishment's services. For example, services provided by hospital interns are categorized as hospital care and the services of nursing home staff nurses are included in nursing home care. However, doctors' fees received from arrangements with hospitals are included in hospital care instead of physician and clinical services.

*Dental services.* CE respondents are asked to provide information about dental care expenses such as exams, cleaning, x rays, fillings, dentures, bridges, orthodontia, crowns, and root canals. The type of provider is not requested.

The MEPS dental services category includes services from any dental care provider, such as general dentists, dental hygienists, dental technicians, and orthodontists. In the NHEA, the dental services category includes services provided by offices of dentists (NAICS 6212). Services received from dentists working for other providers are included in the spending for those providers' services.

*Other professional services.* In the CE, other professional

services includes those provided by health professionals other than physicians, dentists, and optometrists. Among these professionals are chiropractors, acupuncturists, marriage counselors, nurse practitioners, podiatrists, physical therapists, psychologists, substance abuse professionals, and certified medical massage therapists. The "other professional services" category includes services provided both inside and outside the home. The services of optometrists are included in the eye care services category.

MEPS classifies separately billed charges from other medical professionals (that is, medical professionals other than physicians and dentists) by whether the charges were made in connection with outpatient hospital care or an office visit. Unlike the CE, MEPS includes optometrists' services and independently billed laboratory charges in the category of "other professional services."

In the NHEA, the "other professional services" category covers spending for services provided by health professionals (other than physicians and dentists) in independent practice (NAICS 6213). The services of other professionals working for other providers are included in the spending for those providers' services.<sup>22</sup>

*Eye care services.* In the CE, the eye care services category covers eye examinations, treatments, and surgery. There is no distinction between optometrists, who perform eye ex-

aminations and basic treatments, and ophthalmologists, who perform surgery and also can prescribe eyeglasses and contact lenses. MEPS includes optometrists' services in "other professional services" and ophthalmologists' services among those provided by physicians.

In the NHEA, the services of independently practicing optometrists are classified into the "other professional services" category, while the services of independently practicing ophthalmologists are in the physician and clinical services category. If these eye care professionals work for other providers, their services are included in the spending for those providers' services.

*Prescription drugs.* The CE requests spending information on prescription drugs, but not on the type of outlet where they were obtained. MEPS requests information about prescription drugs obtained from a retail outlet, from a health maintenance organization, clinic, or hospital, by mail order, or online. This information is then verified by pharmacies identified by respondents who have authorized the release of their pharmacy records. MEPS includes diabetic supplies, such as syringes and insulin, in the prescription drugs category, even though this spending information is requested in the "other medical supplies" section of the MEPS-HC survey. MEPS data in the latter section are obtained from households, but are not verified by pharmacies. In the CE, spending on syringes and insulin needles is in the category titled "medical equipment for general use."

In the NHEA, the prescription drugs category is included under retail purchase of medical products. This expenditure class is limited to spending on items obtained from retail outlets or by mail order. The value of drugs and of other medical products such as nonprescription drugs and medical equipment provided to patients in hospitals (on an inpatient or outpatient basis), nursing homes, and other provider settings is implicit in the estimates of spending on those providers' services. Optical goods are an exception because they are subtracted from optometrists' receipts and placed in the durable medical products category.

*Nonprescription drugs, nonprescription vitamins, and topicals and dressings.* In the CE, spending information about nonprescription drugs, nonprescription vitamins, and topicals and dressings is collected from Diary Survey respondents only. MEPS estimates, however, do not include spending on nonprescription nondurable goods like those in the three CE categories.<sup>23</sup> The NHEA place retail purchases of items from all three CE categories in the nondurable medical products category.

*Repair of medical equipment.* In the CE, information about spending on medical equipment repair, classified separately as a medical service, is requested from Diary Survey respondents only. In MEPS, all medical equipment spending is in the "other medical equipment and services" category. In the NHEA, the repair of medical equipment is not separated from the purchase or rental of durable medical equipment.

*Medical supplies.* Some of the products in the CE categories classified as medical supplies, such as hearing aids, and eyeglasses and contact lenses, would be considered durable medical products by the NHEA. Other categories—for example, the purchase or rental of medical equipment for general use—contain both durable and nondurable items.

In MEPS, the "other medical equipment and services" category includes durable medical products such as eyeglasses and contact lenses, hearing aids, and medical equipment. Spending on ambulance services; spending on home alterations and modifications, including ramps, handrails, and elevators; and spending on automobile modifications also are in the "other medical equipment and services" category. In the CE, spending on ambulance services is part of the "other medical care services" category, while home alterations and modifications are considered a capital improvement, not an expense. NHEA data do not include information on these two expenditures, except for ambulance services reimbursed by Medicare. MEPS collects spending information about eyeglasses and contact lenses every 6 months, but only once a year for hearing aids, medical equipment, ambulance services, home alterations and modifications, and automobile modifications.

In classifying retail purchases of medical products, the NHEA distinguish between durable and nondurable medical products. The former, which include items such as contact lenses, eyeglasses, and other ophthalmic products; surgical and orthopedic products; medical equipment; oxygen; and hearing aids, generally have a useful life of more than 3 years. Items purchased from other providers are included in the spending on those providers' goods and services.

Nondurable products, such as prescription and nonprescription drugs, needles, and thermometers, generally have a useful life of less than 3 years.

*Nursing home care.* The CE requests information about all services provided and billed by a convalescent or nursing home, whereas nursing home care is out of scope in MEPS.

In the NHEA, the nursing home care category is for



services provided by freestanding nursing homes only: (1) private-sector establishments engaged primarily in providing inpatient nursing and rehabilitative services and continuous care to those requiring nursing care (NAICS 6231), and (2) continuing-care retirement communities with onsite nursing care facilities (NAICS 623311). As mentioned earlier, hospital-based nursing home care outlays are included in the hospital care category (NAICS 622).

*Home health care.* The CE does not request specific information about home health care outlays. In MEPS, the home health care category includes services provided by home health care agencies and paid independent providers. Agencies include hospital-based home health care agencies, as well as freestanding home health care agencies such as visiting-nurse associations. In the NHEA, the home health care category is for freestanding home health care agencies only; hospital-based home health care is included in the hospital care category.

*Health insurance.* The CE collects information about premiums for both private health insurance and Medicare. Private insurance includes coverage obtained individually or through a group plan sponsored by an employer or other organization. Premiums for Medicare supplemental (Medigap) plans, long-term care insurance, and special-purpose plans (dental insurance, vision insurance, prescription drug insurance, and dread-disease policies, among others) also are part of this category. The CE collects information about premiums paid to the Medicare Supplementary Medical Insurance (SMI) Trust Fund (Parts B, C, and D coverage); amounts paid to the Medicare Hospital Insurance (HI) Trust Fund for Part A coverage are treated as deductions from income that go to Social Security.

MEPS-HC respondents provide information about premiums for private health insurance, except for long-term care insurance, but this information is available only from 2001 on. Information about amounts paid to the Medicare SMI and HI Trust Funds is not requested.<sup>24</sup>

In the NHEA, premiums paid by households for private health insurance are part of the private health insurance source of funds. Unlike the CE and MEPS, the NHEA include the portion of property and casualty insurance premiums that covers health care in with household spending for private insurance. In the CE, these amounts are part of the premiums paid for property and casualty coverage as a whole, while MEPS does not collect this information at all. In the NHEA, premiums that individuals pay to the Medicare SMI and HI Trust Funds are in the Federal Government source-of-funds category.<sup>25</sup>

## Comparison methods

The CE data used in this research are unpublished integrated data showing the most detailed (least aggregated) breakdowns available. The MEPSnet/HC query tool was used to obtain expenditure data from the MEPS-HC public-use files. The NHEA data source was the file titled “National Health Expenditures by Type of Service and Source of Funds: Calendar Years 1960–2007.” Data for the years 1996–2006 were examined because MEPS-HC data were available for that period only.<sup>26</sup> Variables examined were out-of-pocket expenses for the following categories:

- Total health care
- Hospital care
- Physicians’ services
- Other professional services
- Dental services
- Prescription drugs
- Medical supplies

Exhibit 1 indicates many differences in scope and methodology among the CE, MEPS, and NHEA. Although data were adjusted to make the data source components as comparable as possible, perfect alignment is not attainable for a number of reasons, to be discussed shortly. At the outset, MEPS and NHEA estimates were adjusted so that they would refer to the CE population concept. A multiplier was computed for each year covered by the research. For MEPS, the multiplier was derived by finding the ratio of the population covered by the CE to the population covered by MEPS. The same procedure was used with NHEA data.<sup>27</sup>

Aggregate out-of-pocket expenses were obtained for all relevant variables for the survey years covered. CE-MEPS and CE-NHEA spending ratios were computed for all variables of interest. The discussion that follows describes these variables and any additional adjustments that were made.

*Total health care expenditures.* This variable is the sum of the following expenditures:

- Hospital care
- Physicians’ services
- Other professional services
- Dental services
- Prescription drugs
- Medical supplies

Out-of-pocket expenses for nursing home care, other non-durable medical products (nonprescription drugs, medi-

cal sundries, and others), and Medicare premiums were excluded because they are out of scope in the MEPS-HC. Premiums for private health insurance were not included because MEPS data were available only for a portion of the period covered by the study. Home health care expenses were excluded because the CE does not specifically request such information.<sup>28</sup>

*Hospital care.* Because the NHEA hospital care category covers all services provided by hospitals, some CE and MEPS categories were combined to make them more comparable to the NHEA hospital care category. For the CE, the categories titled “inpatient hospital care,” “laboratory tests and x rays,” and “other medical services” were combined to form the hospital care category. For MEPS, hospital care was set to the sum of out-of-pocket spending for inpatient, outpatient, and emergency room facilities.

The CE hospital care category was not a perfect fit with either the MEPS or the NHEA category. Because the CE category includes all laboratory tests and x rays, as well as ambulance services, it could overstate CE-MEPS ratios, given that MEPS includes separately billed laboratory tests and x rays in the “other professional services” category and ambulance charges in the “other medical equipment and services” category.

Because the NHEA hospital care category includes all services provided by hospitals, it is possible that hospital-based prescription drug sales, home health and nursing care, and outpatient and emergency room physicians’ charges will reduce CE-NHEA ratios despite the inclusion of ambulance charges and the additional charges for laboratory tests and x rays in the CE category.

*Physicians’ services.* For the CE, the physicians’ services category was used without modification. For MEPS, physicians’ services comprised the combination of separately billed physicians’ charges for (1) hospital inpatient, outpatient, and emergency room care and (2) office visits. Although the CE and MEPS data appeared to be fairly comparable, the choice of NHEA data was difficult because the NHEA categorize such data by the establishment providing the service. The physician and clinical services category was chosen because it was the closest match. Because the NHEA category includes items not found in the CE category (for example, separately billed laboratory charges and prescription drugs from health maintenance organization pharmacies), it was anticipated that CE-NHEA ratios would be lower than CE-MEPS ratios for comparable years.

*Dental services.* The dental services categories were used

without additional adjustment in all three data sources. Although the three categories were fairly similar, CE-NHEA ratios could be higher than CE-MEPS ratios for comparable years. One reason is that the NHEA category covers services rendered by independently practicing dentists only. Charges made by dentists employed by other establishments would be reflected in the charges made by those establishments. Also, services rendered by dental hygienists in independent practice would be included in the “other professional services” category, not in dental services.

*Other professional services.* For the CE, the eye care services category was combined with the “other professional services” category to better align the data with the category in MEPS and the NHEA. However, it is possible that the combined category contains some spending on physicians’ services because some of the procedures captured in eye care services often are provided by ophthalmologists.

For MEPS, the “other professional services” category, which includes optometrists, was used. Although this category is the best fit possible, it also contains separately billed laboratory charges found elsewhere in the CE and the NHEA. Because MEPS data did not permit the removal of these charges, CE-MEPS ratios would likely be lower than ratios calculated without such charges. The amount of the reduction, however, cannot be determined from the data used in this research.

For the NHEA, the “other professional services” category was used. Because this NHEA category includes only those in independent practice, not all services of other professionals will be captured, possibly increasing CE-NHEA ratios.

*Prescription drugs.* The prescription drugs category was used without additional adjustment in all three data sources. For the CE and MEPS, this was a close alignment, because both surveys include prescriptions drugs received from retail outlets and by mail order, as well as from other outlets such as health maintenance organizations, clinics, and hospital pharmacies. Because the NHEA category includes only prescription drugs obtained from retail outlets and by mail order, CE-NHEA ratios are likely to be higher than CE-MEPS ratios for comparable years.

*Medical supplies.* For the CE, the following categories were combined to form the category of medical supplies: eyeglasses and contact lenses, hearing aids, repair of medical equipment, purchase or rental of supportive or convalescent medical equipment, and purchase or rental of

medical equipment for general use.

For MEPS, the “other medical equipment and services” category was used as the measure of medical supplies. This choice was not the best alignment, because the category also includes spending on ambulance services; home modifications, such as ramps, handrails, and elevators; and automobile modifications.

The durable medical products category was used for the NHEA because it was the closest to the CE medical supplies category. Because the NHEA category includes spending on durable items from retail outlets only, it was not an ideal fit with the CE category, which includes spending on durable and nondurable items from all outlets.

## Findings

Table 1 and charts 1 and 2 summarize the information discussed in this section.

*Total health care.* CE-MEPS ratios for total health care spending ranged from 0.68 to 0.93. The highest ratios were for hospital care, while the lowest were for prescription drugs.

CE-NHEA ratios moved between 0.72 and 0.86 during the study period. The highest ratios were for prescription drugs, the lowest for physicians’ services.

*Hospital care.* CE-MEPS ratios for hospital care ranged from 0.98 to 1.82, higher than what might be expected, because MEPS is able to contact hospitals to verify data provided by respondents.

Breaking down CE and MEPS data by inpatient expenditures and outpatient/emergency room expenditures provides some insights into all three findings. The CE-MEPS ratios for inpatient hospital care are the largest, ranging from 1.22 to 2.92. The inpatient hospital findings appear to reflect MEPS out-of-scope charges, which might have been picked up in the CE. Except for 1999, CE-MEPS ratios for outpatient/emergency room hospital care were less than 1.0, ranging from 0.55 to 0.95. These ratios appear to reflect the dissimilar nature of the items in the CE and MEPS categories.<sup>29</sup>

CE-NHEA hospital care ratios ranged from 0.76 to 1.27. Several factors could account for these relatively high ratios. One is that the CE outpatient/emergency room hospital category includes ambulance charges that are not tracked in the NHEA. Also, some of the CE laboratory tests or x-ray charges might be charges that the NHEA would consider separately billed and included in the physician and clinical services category. Because the NHEA hospital

care data did not allow for additional breakdowns, it was not possible to obtain further insights into these findings.

*Physicians’ services.* CE-MEPS ratios for these services ranged from 0.65 to 0.83. The fact that MEPS contacts many of these providers to verify respondents’ information could reduce underreporting, compared with the CE, which does not verify data through a third party.

Physicians’ services had the lowest CE-NHEA ratios, ranging from 0.42 to 0.58. One reason is that separately billed laboratory charges are part of the NHEA category. Another is that, in the NHEA, the establishment providing the service determines what is included in the spending category. For example, health maintenance organizations (part of NAICS 6214, outpatient care centers) often have their own pharmacies. Although these pharmacy charges would fall under the NHEA physician and clinical services category, they would be part of the CE prescription drugs category.

*Other professional services.* CE-MEPS ratios for this category ranged from a low of 0.68 to a high of 1.32. Differences in items included in the CE and MEPS categories could have had an influence. For example, MEPS includes separately billed laboratory charges in the “other professional services” category, whereas these charges would be in the CE hospital care category. Also, the CE includes acupuncture and homeopathic therapy in “other professional services,” but MEPS does not include services provided by these alternative caregivers in its official estimates.

CE-NHEA ratios for the “other professional services” category were higher than those for physicians’ services, ranging from 0.67 to 0.84. One reason is that similar expenses are found in both categories. The less-than-complete alignment could be due to methodological differences between the two data sources and possible underreporting by CE respondents.

*Dental services.* CE-MEPS ratios for dental services varied from 0.76 to 0.97. Although MEPS dental charges are not verified by providers, the more detailed nature of the MEPS interview process could have resulted in less underreporting of dental expenses compared with those reported in the CE.

CE-NHEA ratios for dental services were closely aligned at the beginning of the period, but were 0.72 by the end. One reason for the relatively high ratios is that most, if not all, expenditures for dental services fall under the same classification in both the CE and the NHEA. Underreporting by CE respondents or the NHEA methodology

**Table 1. Comparison of aggregate out-of-pocket health care expenditures: Consumer Expenditure Survey (CES), Medical Expenditure Panel Survey (MEPS), and National Health Expenditure Accounts (NHEA)**

[Aggregate expenditures, in millions]

Expenditure category	1996			1997			1998		
	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio
Health care, total <sup>1</sup> ....	82,949	0.93	0.86	85,814	0.86	0.83	89,366	0.86	0.80
Hospital care .....	12,639	1.82	1.27	12,228	1.20	1.15	12,350	1.21	1.06
Inpatient care .....	8,973	2.92	( <sup>2</sup> )	9,212	2.17	( <sup>2</sup> )	8,918	1.87	( <sup>2</sup> )
Outpatient/emergency room care..	3,666	.95	( <sup>2</sup> )	3,016	.64	( <sup>2</sup> )	3,432	.63	( <sup>2</sup> )
Physicians' services .	14,821	.79	.58	14,104	.75	.52	14,772	.83	.51
Dental services.....	20,130	.93	1.04	21,491	.97	1.01	22,824	.92	.99
Other professional services .....	5,845	.96	.77	6,775	1.12	.79	6,453	1.13	.69
Prescription drugs...	21,799	.77	.94	22,866	.69	.93	24,792	.68	.93
Medical supplies....	7,715	.97	.75	8,351	.92	.76	8,176	.99	.69
Expenditure category	1999			2000			2001		
	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio
Health care, total <sup>1</sup> ....	96,362	.88	.82	100,443	.87	.80	105,290	.78	.79
Hospital care .....	11,087	1.29	.89	11,785	1.29	.89	12,843	1.38	.93
Inpatient care .....	6,693	1.42	( <sup>2</sup> )	8,430	2.17	( <sup>2</sup> )	9,694	2.76	( <sup>2</sup> )
Outpatient/emergency room care .	4,394	1.12	( <sup>2</sup> )	3,355	.64	( <sup>2</sup> )	3,149	.55	( <sup>2</sup> )
Physicians' services .	14,552	.81	.49	14,700	.82	.47	14,580	.71	.45
Dental services.....	24,199	.94	.99	24,147	.90	.90	24,346	.85	.86
Other professional services .....	8,532	1.28	.84	7,877	1.32	.74	7,837	.91	.70
Prescription drugs...	28,075	.66	.95	33,376	.72	1.03	35,572	.62	1.02
Medical supplies....	8,919	1.08	.75	8,569	.91	.72	8,110	.82	.69

See footnotes at end of table.

(or both) might account for the less-than-complete alignment exhibited in recent years.

*Prescription drugs.* CE-MEPS ratios in the prescription drugs category ranged from a low of 0.51 to a high of 0.77. Spending on prescription drugs is verified by pharmacies in the MPC component of the MEPS-HC, most likely increasing accuracy and reducing underreporting among MEPS, compared with CE, respondents.

Although underreporting is a problem in interview surveys, accurate reporting of prescription drug spending is even more difficult than it is for many other expenditures, because respondents must provide details of often numer-

ous purchases for all household members. MEPS handles this problem by relieving the respondent of the burden of reporting detailed spending information for every drug purchase. Instead, computerized printouts or completed survey forms are obtained from respondents' pharmacies. To improve accuracy, MEPS respondents are asked about medications prescribed in connection with other medical events, such as emergency room and office visits.

MEPS research has found that, among respondents with at least one purchase of a prescribed medicine, the average annual number of purchases increased from 11.1 prescriptions per person in 1997 to 16.0 prescriptions in 2004.<sup>30</sup> If CE respondents have had similar experiences,



**Table 1. Continued—Comparison of aggregate out-of-pocket health care expenditures: Consumer Expenditure Survey (CES), Medical Expenditure Panel Survey (MEPS), and National Health Expenditure Accounts (NHEA)**

[Aggregate expenditures, in millions]

Expenditure category	2002			2003			2004		
	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio
Health care, total <sup>1</sup> .....	115,358	0.78	0.80	113,458	0.68	0.72	120,789	0.69	0.75
Hospital care .....	13,938	1.35	.92	13,004	1.10	.76	16,445	1.49	.89
Inpatient care .....	9,874	2.27	( <sup>2</sup> )	8,006	1.64	( <sup>2</sup> )	10,606	2.31	( <sup>2</sup> )
Outpatient/emergency room care.....	4,064	.68	( <sup>2</sup> )	4,998	.72	( <sup>2</sup> )	5,839	.90	( <sup>2</sup> )
Physicians' services .....	16,539	.70	.48	16,569	.73	.45	17,045	.68	.43
Dental services.....	25,477	.83	.81	26,213	.82	.77	27,977	.82	.78
Other professional services .....	8,628	.78	.75	8,437	.74	.67	9,120	.68	.68
Prescription drugs.....	41,909	.68	1.07	40,205	.51	.92	40,630	.51	.89
Medical supplies.....	8,897	.89	.74	9,028	.81	.70	9,570	.79	.73

See footnotes at end of table.

underreporting could have increased because of a recall problem associated with an increase in the number of prescribed drugs.

Although there is no consistent pattern, CE-NHEA ratios for prescription drugs were among the highest, ranging from 0.89 to 1.07. One reason, mentioned earlier, is the fact that the NHEA prescription drug category includes spending on items obtained from retail outlets and mail-order pharmacies only, while the CE also includes items obtained from other sources, such as health maintenance organization pharmacies.

*Medical supplies.* CE-MEPS ratios for medical supplies ranged from 0.76 to 1.08. Because the MEPS category includes ambulance charges and remodeling and alteration expenses, whereas the CE category does not, it is difficult to determine the influence of these expenses on CE-MEPS ratios. The effect of underreporting also is hard to determine. Except for eyeglasses and contact lenses, MEPS collects information on the remaining items in the medical supplies category only once a year. MEPS respondents could be less likely to recall spending on these items, compared with CE respondents, who more frequently report spending on items in this category.

CE-NHEA ratios for medical supplies moved between 0.66 and 0.78 during the 1996–2006 period. Underreporting by CE respondents or the NHEA methodology (or both) might account for the less-than-complete alignment.

AGGREGATE OUT-OF-POCKET HEALTH CARE expenditures from the Consumer Expenditure Survey (CE), the Medical Expenditure Panel Survey (MEPS), and the National Health Expenditure Accounts (NHEA) were examined for the years 1996–2006. CE-MEPS and CE-NHEA ratios were computed for total health care spending and for selected health care spending categories. Although some alignment of the three data sets was possible, differences in methodology appear to be responsible for the lack of agreement among the estimates.

Methodological differences affect the magnitude of the CE-MEPS and CE-NHEA ratios, but they fail to explain the fact that these ratios were generally lower at the end of the period than at the beginning. Data, however, indicate that, for most categories, the greatest declines were during the 1996–2003 period. Since 2003, both ratios have been fairly constant.

*CE-MEPS ratios.* The CE-MEPS ratios may reflect the fact that the MEPS-MPC verifies respondent data for hospital, physician, and prescription drug spending, whereas the CE relies on respondent data only. The nature of the MEPS interview also could play a part, because respondents are asked about health conditions and associated treatments, as well as related expenses, for all household members. This format could increase respondents' recall of expenditures, compared with the CE practice of asking only about the consumer unit's total expenditures.

**Table 1. Continued—Comparison of aggregate out-of-pocket health care expenditures: Consumer Expenditure Survey (CES), Medical Expenditure Panel Survey (MEPS), and National Health Expenditure Accounts (NHEA)**

[Aggregate expenditures, in millions]

Expenditure category	2005			2006		
	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio	CE aggregate expenditure	CE-MEPS ratio	CE-NHEA ratio
Health care, total <sup>1</sup> .....	132,718	0.71	0.75	134,456	0.71	0.74
Hospital care .....	17,854	1.06	.91	18,235	.98	.86
Inpatient care.....	11,100	1.22	( <sup>2</sup> )	11,149	1.23	( <sup>2</sup> )
Outpatient/emergency room care .....	6,754	.87	( <sup>2</sup> )	7,087	.74	( <sup>2</sup> )
Physicians' services .....	18,058	.65	.42	19,954	.65	.43
Dental services .....	29,847	.85	.79	28,399	.76	.72
Other professional services .....	10,350	.73	.73	10,452	.75	.70
Prescription drugs.....	47,551	.58	.99	46,702	.61	1.01
Medical supplies.....	9,054	.76	.66	10,714	.87	.78

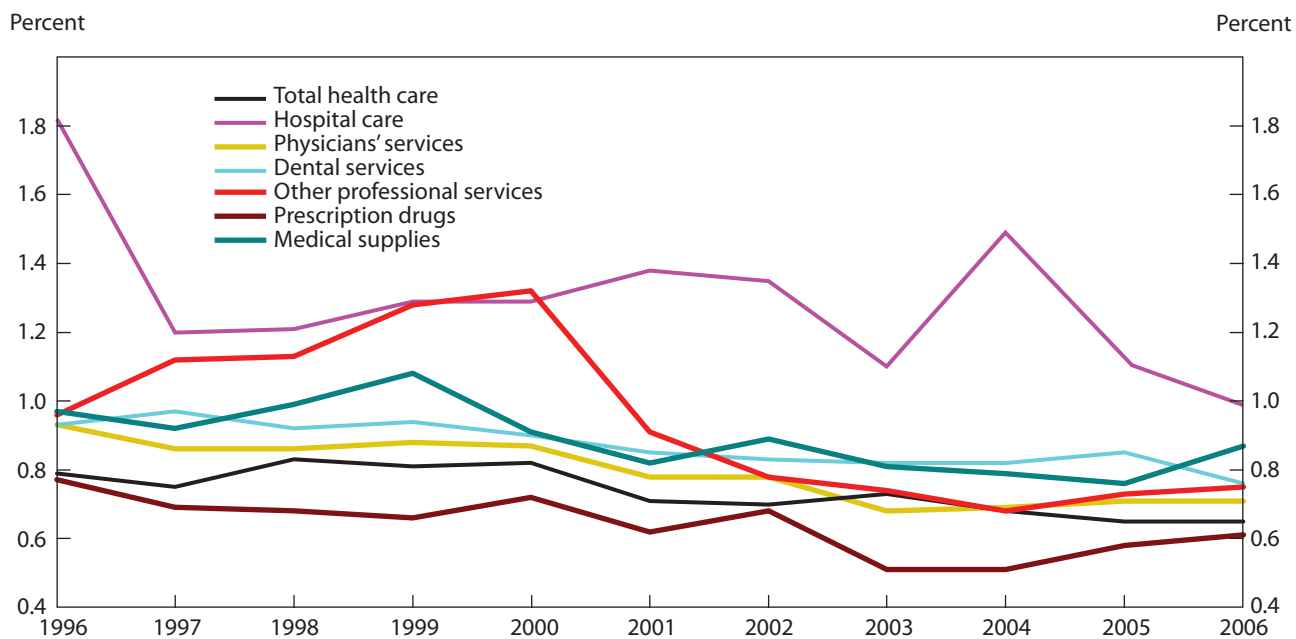
<sup>1</sup> Excludes health insurance premiums, nursing home care, nonprescription drugs, nonprescription vitamins, and topicals and dressings.      <sup>2</sup> Data not available.

The CE is designed to collect information on household expenditures on goods and services used in day-to-day living. Because the survey encompasses more than just health care, it would not be feasible to query respondents in as detailed a manner for all expenses and to verify expenses with third parties, as MEPS does. For this reason, it is likely that the CE will lag MEPS in many of the health care items reported.

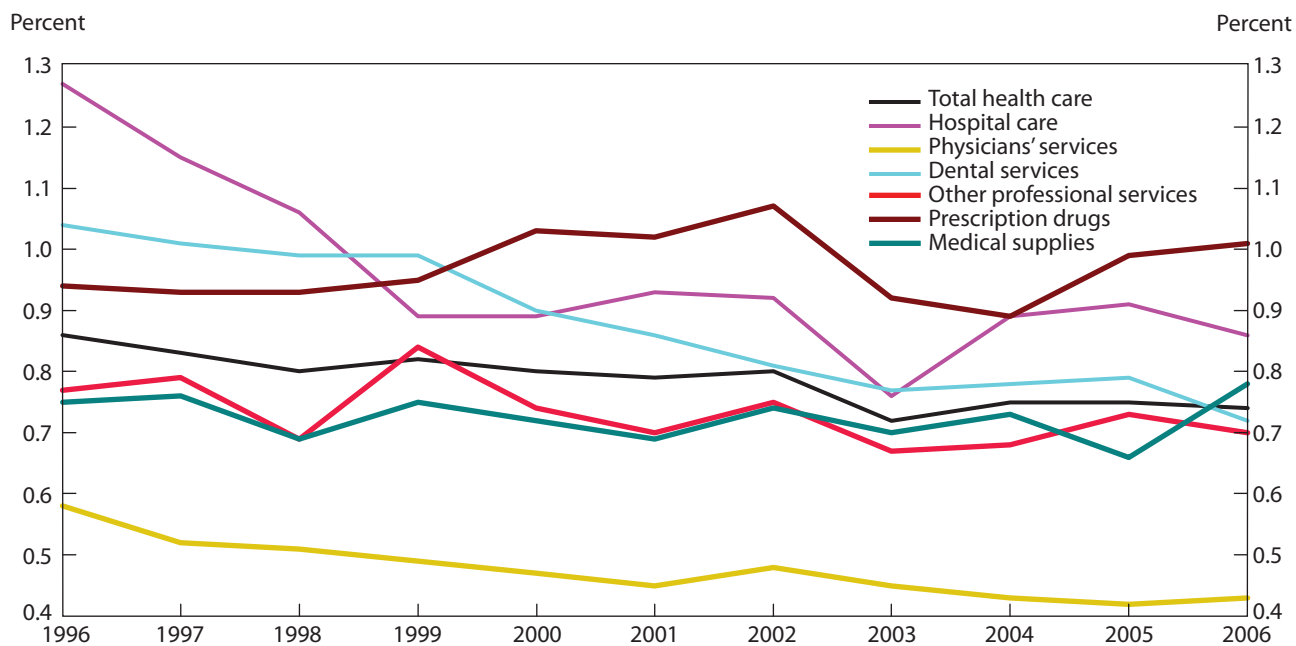
Clearly, a more detailed examination of CE and MEPS health care expenses is needed. Additional research using CE public-use microdata and MEPS household-component full-year public-use data files could result in better data alignment and provide further insights into how consistent the results are.

*CE-NHEA ratios.* NHEA expenditures are based on secondary data sources, whereas CE information is collected directly from households. NHEA estimates are made for business, government, and consumer sources of payment, CE estimates for consumer unit payments only. When NHEA spending by source of payment is estimated, government sources of payment (Medicare, Medicaid, and so forth) are estimated, and then private expenditures (out-of-pocket payments and private health insurance expenditures) are calculated as the residual of total expenditures less government expenditures. The allocation between out-of-pocket expenses and private health insurance expenditures depends on the assumptions that are made by the NHEA. These assumptions ultimately influence CE-NHEA ratios.<sup>31</sup> □

**Chart 1. Consumer Expenditure Survey–Medical Expenditure Panel Survey ratios, 1996–2006**



**Chart 2. Consumer Expenditure Survey–National Health Expenditure Accounts ratios, 1996–2006**



## Notes

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<sup>1</sup> CE data have been regularly compared with estimates from other sources to check for consistency. Because the PCE have been a major source of independent data for comparison, PCE data are not used in this article. For more information, see “Consumer Expenditure Survey compared with Personal Consumption Expenditures,” in *Consumer Expenditure Survey, 2004–2005*, Report 1008 (Bureau of Labor Statistics, October 2008), pp. 6–11, on the Internet at [www.bls.gov/cex/twoyear/200405/csxtwoyr.pdf](http://www.bls.gov/cex/twoyear/200405/csxtwoyr.pdf) (visited Feb. 22, 2010); Thesia I. Garner, George Janini, William Passero, Laura Paszkiewicz, and Mark Vendemia, “The CE and the PCE: a comparison,” *Monthly Labor Review*, September 2006, pp. 20–46, on the Internet at [www.bls.gov/opub/mlr/2006/09/art3full.pdf](http://www.bls.gov/opub/mlr/2006/09/art3full.pdf) (visited Feb. 22, 2010); and Clinton P. McCully, Brian C. Moyer, and Kenneth J. Stewart, “A Reconciliation between the Consumer Price Index and the Personal Consumption Expenditures Price Index” (Bureau of Economic Analysis, September 2007), on the Internet at [www.bea.gov/papers/pdf/cpi\\_pce.pdf](http://www.bea.gov/papers/pdf/cpi_pce.pdf) (visited Feb. 22, 2010).

<sup>2</sup> A consumer unit is defined as (1) all members of a particular household who are related by blood, marriage, adoption, or some other legal arrangement, such as foster children; (2) a financially independent person living alone, sharing a housing unit with others, or living as a roomer in a private home, lodging house, or permanently in a hotel or motel; or (3) two or more persons living together who pool their incomes to make joint expenditures. For more information, see *BLS Handbook of Methods* (Bureau of Labor Statistics, April 2007), chapter 16, “Consumer Expenditures and Income,” on the Internet at [www.bls.gov/opub/hom/pdf/homch16.pdf](http://www.bls.gov/opub/hom/pdf/homch16.pdf) (visited Feb. 22, 2010).

<sup>3</sup> MEPS also has an insurance component (MEPS-IC), which is a separate survey of employers that provides data on employer-based health insurance. For more information, see “Medical Expenditure Panel Survey: Insurance/Employer Component” (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, Oct. 17, 2008), on the Internet at [www.meps.ahrq.gov/mepsweb/survey\\_comp/Insurance.jsp](http://www.meps.ahrq.gov/mepsweb/survey_comp/Insurance.jsp) (visited Feb. 22, 2010).

<sup>4</sup> CE-NHEA data comparisons have been less extensive than CE-PCE comparisons. For more information, see “Consumer Expenditure Survey Comparisons,” pp. 19–21; and E. Raphael Branch, “The Consumer Expenditure Survey: a comparative analysis,” *Monthly Labor Review*, December 1994, pp. 47–55, on the Internet at [www.bls.gov/opub/mlr/1994/12/art6full.pdf](http://www.bls.gov/opub/mlr/1994/12/art6full.pdf) (visited Feb. 22, 2010). Research attempting to reconcile MEPS with NHEA data has examined out-of-pocket expenses, insurance reimbursement, and public-program (Medicare, Medicaid, and so forth) spending on health care. (See Thomas M. Selden, Katharine R. Levit, Joel W. Cohen, Samuel H. Zuvekas, John F. Moeller, David McKusick, and Ross H. Arnett, III, “Reconciling Medical Expenditure Estimates from the MEPS and the NHA, 1996,” *Health Care Financing Review*, fall 2001, pp. 161–78, on the Internet at [www.cms.hhs.gov/HealthCareFinancingReview/Downloads/01fallpg161.pdf](http://www.cms.hhs.gov/HealthCareFinancingReview/Downloads/01fallpg161.pdf) (visited Feb. 22, 2010); Merrile Sing, Jessica S. Banthin, Thomas M. Selden, Cathy A. Cowan, and Sean P. Keehan, “Reconciling Medical Expenditure Estimates from the MEPS and NHEA, 2002,” *Health Care Financing Review*, fall 2006, pp. 25–40, on the Internet at [www.cms.hhs.gov/HealthCareFinancingReview/downloads/06Fallpg25.pdf](http://www.cms.hhs.gov/HealthCareFinancingReview/downloads/06Fallpg25.pdf) (visited Feb. 23, 2010); and Thomas M. Selden and Merrile Sing, *Aligning the Medical Expenditure Panel*

*Survey to Aggregate U.S. Benchmarks*, Working Paper No. 08006 (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, July 2008), on the Internet at [www.gold.ahrq.gov/pdf/110pdf](http://www.gold.ahrq.gov/pdf/110pdf) (visited Feb. 23, 2010).

<sup>5</sup> Excluded are members of the active-duty military and persons residing in institutions such as nursing homes, mental hospitals, jails, prisons, and juvenile correctional facilities. For more information, see *BLS Handbook of Methods*, chapter 16.

<sup>6</sup> For more information, see *BLS Handbook of Methods*, chapter 16.

<sup>7</sup> For more information, see *Consumer Expenditures in 2007*, Report 1016 (Bureau of Labor Statistics, October 2008), on the Internet at [www.bls.gov/cex/csxann07.pdf](http://www.bls.gov/cex/csxann07.pdf) (visited Feb. 23, 2010); and *BLS Handbook of Methods*, chapter 16.

<sup>8</sup> The selection of the survey source is evaluated periodically. For more information, see *BLS Handbook of Methods*, chapter 16.

<sup>9</sup> MEPS is the third in a series of national medical expenditure surveys conducted by the Agency for Healthcare Research and Quality, formerly the Agency for Health Care Policy and Research. The first of these surveys, the National Medical Care Expenditure Surveys (NMCES) was conducted in 1977, the second, the National Medical Expenditure Survey (NMES), in 1987. For more information about these earlier surveys, see “Medical Expenditure Panel Survey: Survey Background” (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, Sept. 5, 2006), on the Internet at [www.meps.ahrq.gov/mepsweb/about\\_meps/survey\\_back.jsp](http://www.meps.ahrq.gov/mepsweb/about_meps/survey_back.jsp) (visited Feb. 23, 2010).

<sup>10</sup> Additional information about the uses of MEPS data may be found in “Medical Expenditure Panel Survey” (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, no date), on the Internet at [www.meps.ahrq.gov/mepsweb](http://www.meps.ahrq.gov/mepsweb) (visited Feb. 23, 2010).

<sup>11</sup> For more information, see T. M. Ezzati-Rice, F. Rohde, and J. Greenblatt, *Sample Design of the Medical Expenditure Survey Household Component, 1998–2007*, Methodology Report No. 22 (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, March 2008), on the Internet at [www.meps.ahrq.gov/mepsweb/data\\_files/publications/mr22/mr22.pdf](http://www.meps.ahrq.gov/mepsweb/data_files/publications/mr22/mr22.pdf) (visited Feb. 23, 2010). Tables providing detailed information about MEPS-HC sample sizes from 1996 to 2006 may be found in “Medical Expenditure Panel Survey: MEPS-HC Sample Sizes” (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, May 1, 2007), on the Internet at [www.meps.ahrq.gov/mepsweb/survey\\_comp/hc\\_sample\\_size.jsp](http://www.meps.ahrq.gov/mepsweb/survey_comp/hc_sample_size.jsp) (visited Feb. 23, 2010).

<sup>12</sup> For a more detailed explanation, see “Medical Expenditure Panel Survey: MEPS Online Workbook” (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, no date), on the Internet at [www.meps.ahrq.gov/mepsweb/about\\_meps/online\\_workbook.jsp](http://www.meps.ahrq.gov/mepsweb/about_meps/online_workbook.jsp) (visited Feb. 23, 2010).

<sup>13</sup> The MPC is not designed as an independent survey of nationwide medical expenditures. One reason is that it does not cover all types of health care providers. Another is that the MPC sample is generated from responses to the MEPS-HC and only providers for whom there is a signed respondent permission form are contacted. (For more information, see Marie N. Stagnitti, Karen Beauregard, and Amy Solis, *Design, Methods, and Field Results of the Medical Expenditure Panel Survey Medical Provider Component (MEPS-MPC)—2006 Calendar Year Data*, Methodology Report No. 23 (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality,



November 2008), on the Internet at [www.meps.ahrq.gov/mepsweb/data\\_files/publications/mr23/mr23.pdf](http://www.meps.ahrq.gov/mepsweb/data_files/publications/mr23/mr23.pdf) (visited Feb. 23, 2010); and Steven R. Machlin and Amy K. Taylor, *Design, Methods, and Field Results of the 1996 MEPS Medical Provider Component*, Methodology Report No. 9 (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, May 2000), on the Internet at [www.meps.ahrq.gov/mepsweb/data\\_files/publications/mr9/mr9.pdf](http://www.meps.ahrq.gov/mepsweb/data_files/publications/mr9/mr9.pdf) (visited Feb. 23, 2010).

<sup>14</sup> The NHEA define the population used in their data tables as the U.S. Census resident population plus the net undercount. The resident population includes all residents (both civilian and in the Armed Forces) living in the United States. The geographic universe for the resident population is the 50 States and the District of Columbia. (For more information, see “Population Estimates: Terms & Definitions” (U.S. Census Bureau, Dec. 22, 2009), on the Internet at [www.census.gov/popest/topics/terms/national.html](http://www.census.gov/popest/topics/terms/national.html) (visited Feb. 23, 2010); and “Category Definitions: National Health Expenditures” (U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, no date), on the Internet at [www.cms.hhs.gov/NationalHealthExpendData/downloads/quickref.pdf](http://www.cms.hhs.gov/NationalHealthExpendData/downloads/quickref.pdf) (visited Feb. 23, 2010).)

<sup>15</sup> For more information, see “National Health Expenditures Accounts: Definitions, Sources, and Methods, 2008” (Centers for Medicare and Medicaid Services, 2008) on the Internet at [www.cms.hhs.gov/NationalHealthExpendData/downloads/dsm-08.pdf](http://www.cms.hhs.gov/NationalHealthExpendData/downloads/dsm-08.pdf) (visited Feb. 23, 2010).

<sup>16</sup> *Ibid.*

<sup>17</sup> *Ibid.*

<sup>18</sup> *Ibid.*

<sup>19</sup> *Ibid.*

<sup>20</sup> *Ibid.* Consumer outlays for private insurance and Medicare premiums are not included in this source of funds because payment is made to a third-party insurer, which the NHEA classify as a separate source of funds.

<sup>21</sup> In the NHEA, services are categorized according to the framework provided by the North American Industrial Classification System (NAICS). (For more information about NAICS, see *North American Industrial Classification System* (Washington, DC, Executive Office of the President, Office of Management and Budget, 2007), on the Internet at [www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2007](http://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2007) (visited Feb. 23, 2010).)

<sup>22</sup> For more information, see “National Health Expenditure Accounts.”

<sup>23</sup> At one time, MEPS collected a limited amount of information on nonprescription, nondurable goods, but the information was not included in official MEPS estimates. Questions requesting this information were omitted from the questionnaire beginning in 2002 (Panel 6, Round 3; and Panel 7, Round 1). (See Selden and others, “Reconciling Medical Expenditure Estimates”; and “Survey Questionnaires—Household Component” (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, Nov. 1, 2006), on the Internet at [www.meps.ahrq.gov/mepsweb/survey\\_comp/survey\\_questionnaires.jsp](http://www.meps.ahrq.gov/mepsweb/survey_comp/survey_questionnaires.jsp) (visited Feb. 23, 2010).)

<sup>24</sup> *Ibid.*

<sup>25</sup> *Ibid.* (For more information, see “Sponsors of Health Care Costs: Business, Households and Government, 1987–2008” (U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, Jan. 4, 2010), on the Internet at [www.cms.hhs.gov/NationalHealthExpendData/downloads/bhg08.pdf](http://www.cms.hhs.gov/NationalHealthExpendData/downloads/bhg08.pdf) (visited Feb. 23, 2010); and “2009 Annual Report of the Boards of

Trustees of the Federal Hospital Insurance and the Federal Supplementary Medical Insurance Trust Fund” (Centers for Medicare and Medicaid Services, May 12, 2009), on the Internet at [www.cms.hhs.gov/ReportsTrustFunds](http://www.cms.hhs.gov/ReportsTrustFunds) (visited Feb. 23, 2010).)

<sup>26</sup> The MEPS data used in this research were accessed on February 24, 2009. The MEPSnet/HC query tool has since been updated to include 2007 MEPS data. (For more information about the MEPSnet/HC query tool, see “Medical Expenditure Panel Survey” (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, Dec. 31, 2009), on the Internet at [www.meps.ahrq.gov/mepsweb/data\\_stats/MEPSnetHC.jsp](http://www.meps.ahrq.gov/mepsweb/data_stats/MEPSnetHC.jsp) (visited Feb. 23, 2010).)

Note that when the Centers for Medicare and Medicaid Services publish data for subsequent years, data from previous years often are revised. The NHEA data used in this article were those released with the 2007 estimates and accessed February 24, 2009. NHEA data for 2008 were released on January 5, 2010, and the earlier data were replaced with newer data titled “National Health Expenditures by Type of Service and Source of Funds: Calendar Years 1960–2008” (U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, Jan. 4, 2010), on the Internet at [www.cms.hhs.gov/NationalHealthExpendData/02\\_NationalHealthAccountsHistorical.asp](http://www.cms.hhs.gov/NationalHealthExpendData/02_NationalHealthAccountsHistorical.asp) (visited Feb. 23, 2010).)

<sup>27</sup> This was the method employed by Garner and colleagues, “The CE and the PCE,” in comparing expenditures reported in those two data sources.

<sup>28</sup> MEPS data were available for 2001–06 only. In addition, MEPS-HC information about private insurance premium payments was not available from the MEPSnet/HC query tool. Also, despite adjustments, it was not possible to remove all nursing home and home health care expenses from the data, because the NHEA includes hospital-based nursing home and home health care in its hospital care category. Finally, nondurable medical products obtained from nonretail outlets, such as hospital or health maintenance organization pharmacies, also would be included in NHEA out-of-pocket expenses for those nondurable medical products obtained from nonretail outlets.

<sup>29</sup> The CE outpatient/emergency room category was formed as the combination of the laboratory tests and x-rays category and the “other medical services” category. The MEPS category includes only charges for hospital outpatient and emergency room facilities. The CE category comprises both spending on laboratory tests and x rays not rendered on an outpatient or emergency room basis and ambulance charges, neither of which is included in the MEPS category.

<sup>30</sup> MEPS data indicate that in 2006 there were 16.5 prescription purchases among those with at least 1 purchase during the year. (For more information, see Marie N. Stagnitti, “Trends in Outpatient Prescription Drug Utilization and Expenditures, 1997 and 2004,” Statistical Brief no. 168 (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, April 2007), on the Internet at [www.meps.ahrq.gov/mepsweb/data\\_files/publications/st168/stat168.pdf](http://www.meps.ahrq.gov/mepsweb/data_files/publications/st168/stat168.pdf) (visited Feb. 23, 2010); and “Average number of Total (Including Refills) and Unique Prescriptions by Select Person Characteristics, 2006,” Statistical Brief no. 245 (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, May 2009), on the Internet at [www.meps.ahrq.gov/mepsweb/data\\_stats/Pub\\_ProdResults\\_Details.jsp?pt=Statistical%20Brief&opt=2&id=906](http://www.meps.ahrq.gov/mepsweb/data_stats/Pub_ProdResults_Details.jsp?pt=Statistical%20Brief&opt=2&id=906) (visited Feb. 23, 2010).)

<sup>31</sup> Research attempting to align MEPS data with NHEA data found that estimated out-of-pocket spending was 12 percent greater in MEPS than in the NHEA. However, estimates of spending on personal health insurance, Medicare, and Medicaid were lower than those of the NHEA. (For more information, see Sing and colleagues, “Reconciling Medical Expenditure Estimates.”)