Research Spotlight

A Reconciliation of Health Care Expenditures in the National Health Expenditures Accounts and in Gross Domestic Product

By Micah B. Hartman, Robert J. Kornfeld, and Aaron C. Catlin

THE SIZE and scope of the recently passed Patient Protection and Affordable Care Act highlights the importance of health care spending to our economy. Understanding and accounting for health care spending in a comprehensive and consistent way continues to be of paramount importance to researchers, policymakers, and business leaders. Much of this attention results from the dramatic increase in the share of the economy devoted to health care over the past half-century, from 5.2 percent in 1960 to 16.2 percent in 2008, as well as the expectation that the share will increase to more than 19 percent by 2019.[1] To gain insights into the consumption of medical goods and services, the financing of these purchases, and the share of our nation's economic output that is devoted to health care spending, it is important to understand and reconcile different, widely cited estimates of health care expenditures.

This article presents a summarized overview of a new working paper, "Health Care Expenditures in the National Health Expenditures Accounts and in Gross Domestic Product: A Reconciliation." This paper reconciles the national health expenditure accounts (NHEA), the official estimates of health care spending in the United States from the Centers for Medicare and Medicaid Services (CMS), and the estimates of health expenditures that are part of gross domestic product (GDP) produced by the Bureau of Economic Analysis (BEA) as part of the national income and product accounts (NIPAs). This research provides a detailed reconciliation of estimates of specific categories of health expenditures and identifies and quantifies the similarities and differences between the two accounts, building on previous research to provide the most complete in-depth reconciliation to date.[2]

This reconciliation marks a milestone in BEA's long-term efforts to create a health care expenditures satellite account. The goal of the account is to provide detailed statistics about the health care industry and its role in the economy.[3]

The estimates of total national health spending in the NHEA and in the GDP data are relatively similar; they differ by less than 2 percent in most years back to 1960 (chart 1). This similarity is not surprising as the two accounts measure spending for a similar set of medical goods and services and rely on many similar data sources. At a disaggregated level, however, larger differences in the estimates of narrower categories of health care spending emerge. These differences need to be explained so that data users understand how to use each data set to best meet their needs.

Health Expenditures in the NHEA and GDP: Key Differences

Both the NHEA and the health-related expenditures within GDP are generally consistent with the definitions of health care activities in the *System of Health Accounts* from the Organisation for Economic Co-Operation and Development. In the United States, the Census Bureau uses the North American Industry

1. Centers for Medicare and Medicaid Services, Office of the Actuary, health care spending projections for 2009–2019. The data in the tables of this paper (from the Census Bureau or other sources) reflect available published data as of early 2010. They do not incorporate the results of BEA's 2010 annual revision of the NIPAs.

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2. Sensenig and Wilcox (2001) and Ho and Jorgenson (2005) present earlier attempts to reconcile the two accounts.

3. Aizcorbe, Retus, and Smith (2008).

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Classification System (NAICS) to classify all business establishments, including those in the health care sector. BEA, CMS, and many of the agencies that collect primary source data used to produce the NHEA and GDP estimates also rely on NAICS to classify statistics on the U.S. economy (table 1). However, this data often requires numerous adjustments to produce estimates consistent with the primary goals of BEA and CMS. These adjustments are the focus of the reconciliation as they ultimately define the majority of the differences between the two accounts.

The primary goal of the NHEA is to measure total domestic health sector expenditures in a comprehensive and consistent way that allows for analysis of spending for health care goods and services and the sources of funds that pay for that care. An important goal of the NIPAs is to produce internationally

Chart 1. National Health Expenditures (CMS) and Health Expenditures in GDP (BEA), 1997–2008

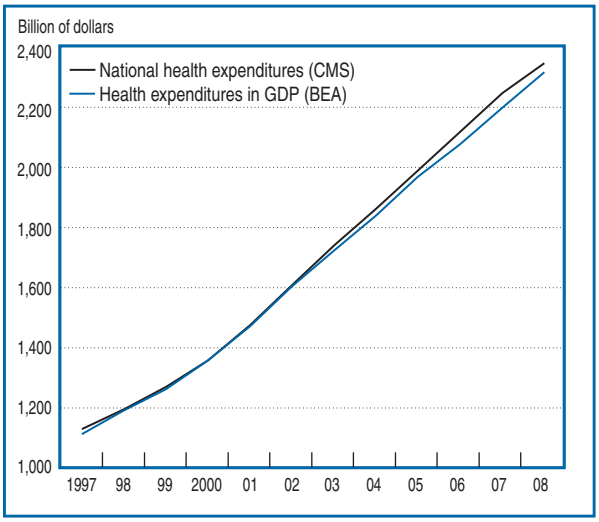


Table 1. Classification of Receipts of NAICS Services Industries in the NHEA and in GDP

NAICS code and Industry title	Type of expenditure	
	GDP (BEA) main commodity[1]	NHEA (CMS)
62 Health care and social assistance		
621 Ambulatory health care services		
6211 Offices of physicians	Physician services	Physician and clinical services
6212 Offices of dentists	Dental services	Dental services
6213 Offices of other health practitioners		
62131 Offices of chiropractors	Other professional medical services	Other professional services
62132 Offices of optometrists	Durable goods	Other professional services/durable equipment[2]
62133 Offices of mental health practitioners	Other professional medical services	Other professional services
62134 Offices of physical, occupational and speech therapists, and audiologists	Other professional medical services	Other professional services
62139 Offices of all other health practitioners		
621391 Offices of podiatrists	Other professional medical services	Other professional services
621399 Offices of all other miscellaneous health practitioners	Other professional medical services	Other professional services
6214 Outpatient care centers		
62141 Family planning centers	Other professional medical services	Physician and clinical services
62142 Outpatient mental health and substance abuse centers	Other professional medical services	Physician and clinical services
62149 Other outpatient care centers		
621491 HMO medical centers	Physician services	Physician and clinical services
621492 Kidney dialysis centers	Other professional medical services	Physician and clinical services
621493 Freestanding ambulatory surgical & emergency centers	Physician services	Physician and clinical services
621498 All other outpatient care centers	Other professional medical services	Physician and clinical services
6215 All other outpatient care centers		
621511 Medical and diagnostic laboratories	Medical labs	Physician and clinical services
621512 Diagnostic imaging centers	Medical labs	Physician and clinical services
6216 Home health care services	Home health care services	Home health care
6219 Other ambulatory care services		
62191 Ambulance services	Other professional medical services	Not in NHEA[3]
621999 All other miscellaneous ambulatory health care services	Other professional medical services	Nonhealth[3]
622 Hospitals		
6221 General medical and surgical hospitals	Hospital services	Hospital care
6222 Psychiatric and substance abuse hospitals	Hospital services	Hospital care
6223 Specialty (except psychiatric and substance abuse) hospitals	Hospital services	Hospital care
623 Nursing and residential care facilities		
6231 Nursing care facilities	Nursing home services	Nursing home care
6232 Residential mental retardation, mental health and substance abuse facilities		
62321 Residential mental retardation facilities	Nursing home services	Only Medicaid expenditures for ICFMRs (see the text)
62322 Residential mental health and substance abuse facilities	Nonhealth	
6233 Community care facilities for the elderly		
623311 Continuing care retirement communities	Nursing home services	Nursing home care
623312 Homes for the elderly	Nonhealth	Nonhealth[3]
6239 Other residential care facilities	Nonhealth	Nonhealth[3]
624 Social assistance	Nonhealth	Nonhealth[3]
532291 Home health equipment rental	Other professional medical services	Durable medical equipment

BEA Bureau of Economic Analysis
CMS Centers for Medicare and Medicaid Services
GDP Gross domestic product
HMO Health Maintenance Organization
ICFMR Intermediate Care Facilities for the Mentally Retarded
NAICS North American Industry Classification System
NHEA National health expenditure accounts

1. In the GDP statistics, most of the receipts of each industry are for purchases of a main or primary commodity. Industry receipts differ from commodity expenditures because commodity expenditures exclude industry receipts from other sources and include commodity sales by other industries, and for other reasons.
2. In the NHEA, optometrists' services are classified with "other" professional services; eyewear is classified with durable medical equipment.
3. Unless funded by Medicare, Medicaid, or Children's Health Insurance Program.

comparable estimates of GDP, which measures the final demand for goods and services produced in the United States. The GDP estimates, unlike the NHEA estimates, do not identify the sources of funds (such as out-of-pocket spending, private insurance, or Medicaid and other government programs) for each of the categories of health spending in GDP.

CMS and BEA have identified five general sources of discrepancies between the estimates of spending for health care goods and services in the NHEA and in GDP:

- The classification of certain industries, goods, and services
- The treatment of government facilities and expenditures
- BEA's adjustments to estimate final commodity demand by households
- The treatment of nonprofit institutions serving households (NPISHs)
- The use of some different data sources and estimation methodologies

Classification of industries and commodities

Differences in the classification of health spending in the NHEA and GDP accounts contribute to discrepancies in total health spending and in the underlying detailed estimates. The two accounts define "health-related" spending in different ways, contributing to some instances where detailed spending categories are classified as health-related in one account, but not in the other. Additionally, some categories of health spending that are included in both accounts are classified under different major spending categories. For example, services of optometrists are classified under personal consumption expenditures (PCE) for therapeutic appliances and equipment in the GDP statistics but are included in other professional services in the NHEA.

The treatment of government facilities and expenditures

Government agencies may directly purchase health care that is provided by a government-owned health care facility (such as a Department of Veterans Affairs hospital) or that is provided by privately owned facilities (such as a private hospital where a veteran may receive care paid for by a Department of Veterans Affairs facility). The treatment of government-purchased health care differs in the NHEA and GDP accounts: the NHEA estimates classify government outlays for these public facilities with the spending for the related health care industry (for example, with hospitals or physicians), while the GDP estimates classify these expenditures as part of government consumption expenditures. This different treatment of government-owned health care providers results in discrepancies in the estimates of some categories of health care spending (such as hospitals) but does not lead to large discrepancies in total health care spending.

The two accounts, on the other hand, have a similar treatment of sales of health care to households by government-owned facilities, such as state and local government hospitals. These sales (financed by households or government or private insurers) are treated as expenditures for the industry in the NHEA (hospitals) or the commodity in GDP (hospital services).

Additionally, the two accounts have a slightly different treatment of expenditures financed by the major government insurance programs (Medicare, Medicaid, and Childrens' Health Insurance Program). In the NIPAs, these insurance programs are classified as "government social benefits" that finance expenditures that make up GDP; in the NHEA, these programs are a "source of funding" for health care expenditures. With few exceptions, the NHEA classify all of these expenditures, including Medicaid waiver spending that is intended to improve the quality of life and reduce costly inpatient stays, as health spending. While these funds also generally pay for health-related spending in the GDP data, some of these funds may purchase services that are grouped with nonhealth spending categories, such as social assistance, in the GDP estimates. This different treatment of government insurance programs contributes to slightly higher total health care spending in the NHEA.

BEA's adjustments to estimate final commodity demand

While the NHEA measure total revenues of NAICS-based health care *industries* (such as freestanding nursing homes), the GDP data measure spending for health care *commodities* (goods or services), such as nursing home services. For example, in the GDP accounts, expenditures for nursing home care include the sales of nursing home services from both freestanding nursing homes and other providers (such as hospitals) and exclude receipts from nonpatient services (such as parking lots) and for other commodities provided by nursing homes to patients (drugs or lab work). In the NHEA, nursing home care includes total revenues of establishments classified as freestanding nursing homes by the NAICS, while hospital-based nursing home care is included in the estimate of hospital spending. As a result, the sales of a health care industry are generally different from the sales of the industry's primary health care commodity. The GDP estimates reflect numerous adjustments that convert industry

sales data that are commonly reported in source data to final commodity demand.

In addition, the NHEA include adjustments for intermediate sales, nonbenchmark-year interpolation and extrapolation, the inclusion of nonpatient revenues, and other miscellaneous adjustments. The GDP statistics incorporate adjustments to estimate final commodity demand and other adjustments.

The treatment of NPISHs

In the GDP data, the large portion of PCE for services known as *household consumption expenditures* (HCE) consists mainly of receipts from sales of services to households. The GDP data also report a second category of PCE for services that are not reported explicitly in the NHEA: final consumption expenditures of nonprofit institutions serving households, or NPISHs. These expenditures are measured residually as gross output (the cost of inputs to produce the service, including compensation and intermediate purchases) less sales to households and other sectors and less own-account investment (construction and software produced by NPISHs for their own use). Final consumption expenditures by NPISHs measure the production of services provided to households without charge. In the NHEA, health care provided by nonprofit (and for-profit) institutions is measured as total net revenue, which includes nonpatient and nonoperating revenue. Although the final expenditures of NPISHs in the GDP estimates are to some extent funded by nonpatient revenues that are included in the NHEA, these two items are not necessarily equal, so the different treatment of nonprofits leads to some differences in estimated health expenditures.

The use of different data sources and methodologies

While many of the data sources used in the NHEA and NIPA are the same, in some estimates, CMS and BEA rely on different data sources. For example, expenditures for hospital care are measured in the GDP estimates using data from the Census Bureau, while in the NHEA, the American Hospital Association (AHA) Annual Survey is used as a benchmark source. Also, the two agencies have different revision schedules, which stipulate the release dates for revised data (which incorporate revisions of source data and other changes) and often lead to the use of different "vintages" of source data. Even when the two accounts use the same data sources and vintages, some differences in methodologies (other than those described above) can lead to different estimates.

Summary of the Reconciliation of Expenditures for Health-Related Goods and Services

Most health care spending in the United States, more than 80 percent, can be attributed to expenditures for medical goods and services—including care provided by physicians and clinics, hospitals, other professionals, dentists, nursing homes, home health agencies—as well as purchases of nondurable and durable goods and retail prescription drugs (tables 2 and 3). For the estimates of most, but not all, of these goods and

Table 2. National Health Expenditure Accounts, 1997–2008

[Billions of dollars]

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
National health expenditures	1,125.1	1,190.0	1,265.2	1,352.9	1,469.2	1,602.4	1,735.2	1,855.4	1,982.5	2,112.5	2,239.7	2,338.7
Health services and supplies	1,053.8	1,110.7	1,179.8	1,264.1	1,375.7	1,498.4	1,623.5	1,733.6	1,851.9	1,975.4	2,089.7	2,181.3
Personal health care	959.3	1,010.0	1,067.8	1,139.2	1,238.3	1,340.3	1,447.5	1,549.9	1,655.2	1,762.9	1,866.4	1,952.3
Hospital care	364.7	376.2	394.8	416.9	451.2	488.4	527.4	566.5	607.5	649.4	687.6	718.4
Professional services	352.6	375.9	397.9	426.8	465.4	503.2	543.0	581.2	621.5	658.4	697.5	731.2
Physician and clinical services	241.0	256.4	269.6	288.6	313.2	337.9	366.7	393.6	422.4	446.5	472.6	496.2
Other professional services	33.4	35.7	37.1	39.1	42.8	45.6	49.0	52.9	55.9	58.4	62.2	65.7
Dental services	50.2	53.5	57.1	62.0	67.5	73.3	76.9	81.5	86.3	90.7	96.4	101.2
Other personal health care	28.1	30.3	34.0	37.1	41.9	46.4	50.4	53.3	56.9	62.7	66.3	68.1
Nursing home and home health	119.0	122.8	122.0	125.8	133.7	139.9	148.5	157.9	168.8	178.1	191.7	203.1
Home health care	34.5	33.2	31.5	30.5	32.2	34.2	38.0	42.7	48.1	53.0	59.3	64.7
Nursing home care	84.5	89.5	90.5	95.3	101.5	105.7	110.5	115.2	120.7	125.1	132.4	138.4
Retail outlet sales of medical products	123.0	135.2	153.1	169.8	188.0	208.9	228.7	244.3	257.4	277.0	289.7	299.6
Prescription drugs	77.6	88.5	104.6	120.6	138.3	157.6	174.2	188.8	199.7	217.0	226.8	234.1
Other medical products	45.4	46.6	48.5	49.2	49.7	51.2	54.5	55.5	57.7	60.0	62.9	65.5
Durable medical equipment	18.1	18.7	19.1	19.4	19.7	20.8	22.4	22.8	23.8	24.7	25.5	26.6
Other nondurable medical products	27.3	27.9	29.4	29.8	30.0	30.4	32.1	32.7	34.0	35.3	37.4	39.0
Government administration and net cost of private health Insurance	59.7	63.3	71.2	81.8	90.2	105.7	122.3	129.8	140.3	152.0	158.4	159.6
Government administration	19.4	22.1	24.4	28.8	32.4	35.9	38.5	42.7	47.7	57.4	62.2	65.9
Administration of philanthropy	0.8	0.9	1.0	1.1	1.2	1.2	1.2	1.3	1.4	1.5	1.6	1.7
Net cost of private health insurance	39.5	40.3	45.9	52.0	56.6	68.6	82.6	85.8	91.2	93.0	94.6	92.0
Government public health activities	34.8	37.5	40.7	43.0	47.1	52.4	53.6	53.8	56.4	60.6	64.8	69.4
Investment	71.3	79.2	85.4	88.8	93.5	104.0	111.7	121.8	130.6	137.1	150.0	157.5
Research	19.6	21.5	23.4	25.6	28.8	32.5	35.5	38.9	40.7	41.8	42.5	43.6
Private	1.9	2.1	2.2	2.5	2.8	3.1	3.3	3.4	3.7	4.0	4.3	4.7
Government	17.8	19.5	21.2	23.0	26.0	29.5	32.1	35.5	37.0	37.8	38.2	38.9
Structures and equipment	51.7	57.7	62.0	63.2	64.7	71.5	76.3	83.0	90.0	95.3	107.5	113.9

Source: Centers for Medicare and Medicaid Services

services, CMS and BEA rely on the same data sources, such as the quinquennial Economic Census and the Service Annual Survey from the Census Bureau. However, the NHEA and GDP estimates incorporate several adjustments to the source data to produce estimates consistent with the core functions of each program (chart 2 and table 4).

Aggregate expenditures for physician, clinical, medical lab, and other professional services

At the most detailed level, the NHEA and the GDP data classify spending for physician, clinical, medical lab, and other professional services (in 2008, $561.9 billion in NHE, compared with $565.8 billion in HCE) in slightly different ways, making it difficult to reconcile detailed categories. The annual discrepancy between the sums of estimates of NHE and HCE for these services ranges from $1.8 to –$8.7 billion, or no more than 2 percent. The differences are mainly due to BEA's adjustments to estimate final commodity demand, the treatment of optometrists' services, and other differences in the way revenues are classified.

The more detailed estimate of NHE for physician and clinical services is relatively higher than the estimate of HCE for physician services and medical labs mainly because it includes expenditures for a broader array of outpatient care centers services. The NHE estimate also includes government spending for public health clinics run by the Department of Veterans Affairs, the Indian Health Service, and the Coast Guard Academy, while the GDP data classify this spending as part of government consumption expenditures.[4] The HCE estimate for physician services and medical labs also incorporates several adjustments which, on balance, subtract from the level of total industry sales to derive an estimate of final commodity demand.

The estimate of HCE for other professional medical services is larger than the estimate of NHE for other professional services mainly because it includes spending for services from a wider array of industries that are included in the estimate of NHE for physician and clinical service. In addition, BEA's adjustments to estimate final commodity demand by household have the net effect of raising the estimate of HCE for other professional medical services slightly above the level of industry sales in most years. Both agencies include estimates of select expenditures for ambulance services, although the NHEA estimate only covers Medicare and

4. The NHE estimate also includes small judgmental adjustments that are based on other data sources from the Internal Revenue Service and the Bureau of Labor Statistics.

Table 3. Health Care Expenditures in Components of Gross Domestic Product (GDP), 1997–2008

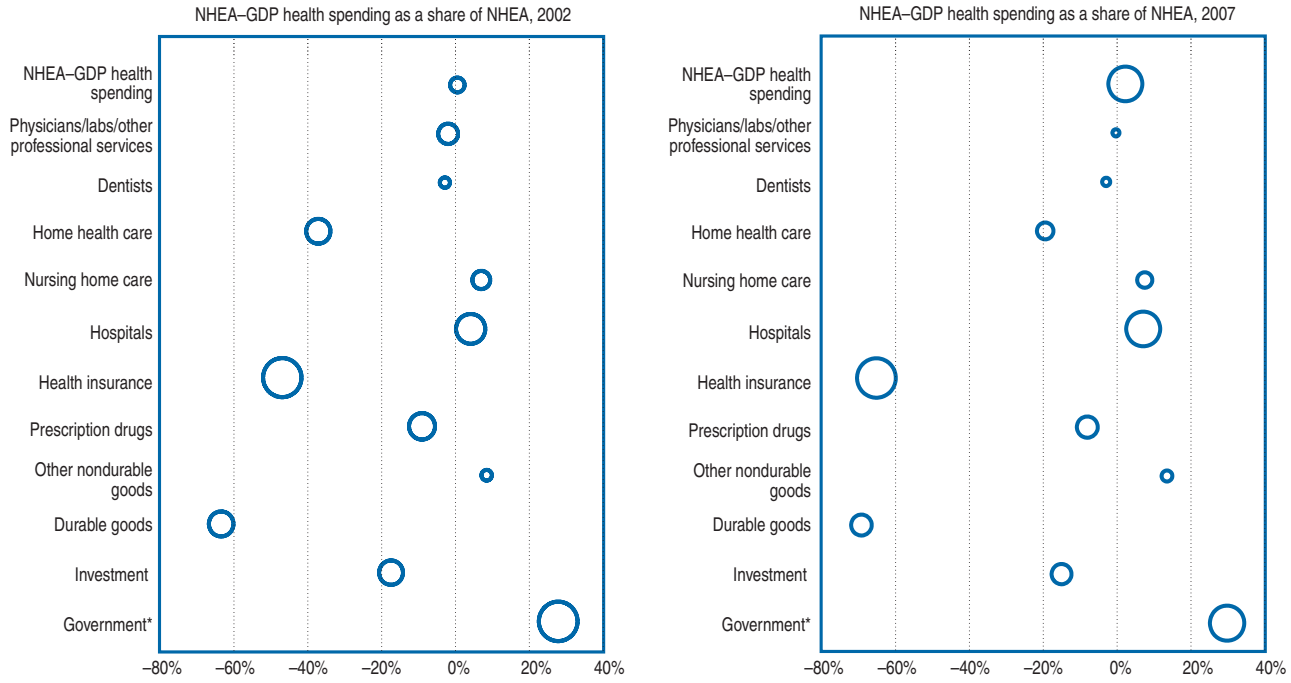
[Billions of dollars]

	NIPA table	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total selected health expenditures in GDP		**1,107.3**	**1,185.8**	**1,255.4**	**1,351.5**	**1,466.7**	**1,597.9**	**1,718.5**	**1,832.8**	**1,961.7**	**2,070.2**	**2,191.9**	**2,309.5**
Total health-related personal consumption expenditures		988.9	1,060.7	1,122.3	1,208.3	1,316.6	1,428.6	1,534.2	1,639.5	1,745.9	1,845.9	1,951.9	2,048.3
Durable goods, therapeutic appliances and equipment	2.4.5U, line 64	25.3	27.8	29.7	32.2	31.8	34.0	35.0	36.4	38.2	40.2	43.2	44.3
Total health-related nondurable goods		103.7	119.8	140.0	159.0	181.0	200.2	219.6	234.5	247.3	267.1	277.6	279.4
Pharmaceutical products	2.4.5U, line 120	102.3	118.3	138.3	157.1	178.9	198.0	217.3	232.1	244.7	264.4	274.7	276.2
Prescription drugs	2.4.5U, line 121	82.1	97.3	115.9	133.8	154.9	172.3	191.3	207.5	218.9	236.9	245.2	244.4
Nonprescription drugs	2.4.5U, line 122	20.3	21.0	22.4	23.2	24.0	25.7	26.1	24.5	25.8	27.5	29.4	31.9
Other medical products	2.4.5U, line 123	1.3	1.5	1.7	2.0	2.1	2.2	2.3	2.4	2.5	2.7	3.0	3.2
Total household consumption expenditures for health-related services		859.9	913.1	952.6	1,017.1	1,103.7	1,194.4	1,279.7	1,368.6	1,460.4	1,538.5	1,631.1	1,724.3
Health care	2.4.5U, line 168	790.9	832.0	863.6	918.4	996.6	1,082.9	1,149.3	1,229.7	1,316.0	1,380.7	1,469.6	1,554.2
Physician services	2.4.5U, line 170	190.9	202.0	212.1	229.2	249.3	269.3	291.3	311.4	332.4	346.8	365.6	381.8
Dental services	2.4.5U, line 171	50.9	54.6	58.5	63.6	69.3	75.6	78.1	83.9	89.0	93.5	99.3	103.5
Paramedical services	2.4.5U, line 172	127.3	133.8	136.5	143.8	157.2	169.8	182.6	198.4	215.1	224.7	242.3	261.9
Home health care	2.4.5U, line 173	45.7	45.3	43.2	42.8	45.4	47.0	50.2	56.1	61.2	64.1	70.9	77.9
Medical laboratories	2.4.5U, line 174	11.4	13.2	14.5	16.9	19.7	21.0	23.0	24.8	26.7	28.1	29.1	30.7
Other professional medical services	2.4.5U, line 175	70.2	75.2	78.8	84.1	92.0	101.8	109.4	117.5	127.1	132.5	142.3	153.3
Hospitals	2.4.5U, line 179	345.5	360.1	373.2	393.9	427.1	469.5	493.8	528.8	567.0	601.0	639.7	680.0
Nursing homes	2.4.5U, line 183	76.3	81.5	83.2	87.9	93.7	98.6	103.4	107.2	112.5	114.7	122.6	127.0
Health insurance	2.4.5U, line 269	68.4	74.7	79.2	88.1	94.1	100.9	117.0	134.4	145.1	150.6	156.3	161.8
Total final consumption expenditures of nonprofit health services providers		0.6	6.4	9.8	10.6	13.0	10.5	13.5	4.4	–0.7	7.2	5.3	8.3
Gross output	2.4.5U, line 338	287.7	308.4	324.6	342.3	369.0	403.4	427.6	453.7	484.1	515.1	544.6	574.9
Less: receipts from sales of health services to households	2.4.5U, line 351	287.1	302.0	314.9	331.7	356.0	392.9	414.2	449.3	484.8	507.9	539.3	566.6
Total federal government consumption expenditures and gross investment in health		43.1	44.9	45.1	49.8	53.9	58.6	65.0	65.5	67.1	68.8	72.8	81.2
Federal government consumption expenditures, health	3.17, line 17	37.9	39.1	39.0	43.9	48.2	52.8	58.5	59.8	60.6	62.8	65.8	73.2
Federal government gross investment, health	3.17, line 114	5.2	5.8	6.1	5.9	5.7	5.8	6.5	5.7	6.5	6.0	7.0	8.0
Total state and local government consumption expenditures and gross investment, health		29.3	29.9	35.1	36.3	35.8	41.8	44.4	47.2	58.1	58.8	62.9	67.4
State and local government consumption expenditures, health	3.17, line 26	21.8	22.0	27.2	28.1	27.2	32.5	34.7	36.9	46.8	47.4	50.4	54.6
State and local government gross investment, health	3.17, line 123	7.5	7.9	7.9	8.2	8.6	9.3	9.7	10.3	11.3	11.4	12.5	12.8
Total private health-related fixed investment		46.0	50.3	52.9	57.1	60.4	69.0	74.9	80.6	90.7	96.7	104.3	112.7
Health care structures	5.4.5U, line 5	19.6	20.0	20.7	21.9	22.0	25.2	27.3	29.6	32.1	36.0	40.1	44.0
Medical equipment and instruments	5.5.5U, line 8	26.4	30.3	32.2	35.2	38.5	43.8	47.6	51.1	58.6	60.7	64.3	68.7

Source: Bureau of Economic Analysis. These NIPA statistics do not incorporate the results of the 2010 annual NIPA revision.

Medicaid payments for these services, while the GDP estimate includes ambulance services provided by the private sector, financed by Medicare and Medicaid as well as other payers.

Chart 2. NHEA Minus GDP Health Spending as Share of NHEA, 2002 and 2007



*Government health-related spending includes public health, administration, and research in the NHEA and health-related government consumption expenditures in GDP.

NOTE. The size of the bubble is a measure of the relative size of the difference (NHEA–GDP) ranked from smallest to largest for all of the differences presented for each year shown.

U.S. Bureau of Economic Analysis

Table 4. Differences Between Estimates of Health Care Expenditures in the National Health Expenditure Accounts (NHEA) and in Gross Domestic Product (GDP), 1997–2008

[Billions of dollars]

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total NHEA health expenditures less total GDP health expenditures	**17.8**	**4.2**	**9.8**	**1.4**	**2.5**	**4.5**	**16.7**	**22.5**	**20.8**	**42.3**	**47.8**	**29.2**
NHE for other professional services and physician and clinical services less HCE for other professional medical services and physicians services and medical labs[1]	1.8	1.7	1.3	–2.5	–5.1	–8.6	–7.9	–2.5	–7.9	–2.5	–2.2	–3.9
NHE for dental services less HCE for dental services	–0.7	–1.1	–1.4	–1.6	–1.8	–2.3	–1.2	–2.4	–2.7	–2.8	–2.9	–2.3
NHE for home health care less HCE for home health care services	–11.2	–12.1	–11.7	–12.3	–13.2	–12.8	–12.2	–13.4	–13.1	–11.1	–11.6	–13.2
NHE for nursing home care less HCE for nursing home services	8.2	8.0	7.3	7.4	7.8	7.1	7.1	8.0	8.2	10.4	9.8	11.4
NHE for hospital care less HCE for hospital services	19.2	16.1	21.6	23.0	24.1	18.9	33.6	37.7	40.5	48.4	47.9	38.4
NHE for net cost of private health insurance less HCE for health insurance services	–28.9	–34.4	–34.3	–36.1	–37.5	–32.3	–34.4	–48.7	–53.9	–57.6	–61.7	–69.8
NHE for prescription drugs less PCE for prescription drugs	–4.5	–8.7	–11.3	–13.2	–16.6	–14.6	–17.1	–18.8	–19.2	–19.9	–18.5	–10.3
NHE for other nondurable medical products less PCE for other nondurable goods	5.7	5.3	5.3	4.6	3.9	2.5	3.8	5.8	5.6	5.1	5.0	3.9
NHE for durable medical equipment less PCE for durable goods	–7.2	–9.1	–10.6	–12.8	–12.1	–13.2	–12.6	–13.6	–14.5	–15.5	–17.7	–18.0
NHE for investment in structures and equipment less government gross investment and private fixed investment in GDP	–7.0	–6.2	–4.9	–8.0	–10.0	–12.6	–14.8	–13.7	–18.5	–18.8	–16.3	–19.6
NHE for public health activities, government administration, public investment in research less government consumption expenditures in GDP	12.3	17.9	20.1	22.9	30.1	32.4	31.0	35.4	33.7	45.6	49.0	46.5
NHE for other personal health care (NHE only)	28.1	30.3	34.0	37.1	41.9	46.4	50.4	53.3	56.9	62.7	66.3	68.1
NHE for administration of philanthropy and private research (NHE only)	2.6	2.9	3.2	3.6	4.0	4.3	4.5	4.6	5.0	5.5	6.0	6.3
Subtotal NHE less GDP (without NIPISH)	18.4	10.7	18.6	12.0	15.7	15.1	30.2	26.9	77.6	49.6	53.1	37.5
Less: GDP final consumption expenditures of nonprofit institutions serving households (NIPA only)	0.6	6.4	9.8	10.6	13.0	10.5	13.5	4.4	–0.7	7.2	5.3	8.3

HCE Household consumption expenditures
NHE National health expenditures
NIPAs National income and product accounts
PCE Personal consumption expenditures

1. National health expenditures are from the national health expenditure accounts of the Centers for Medicare and Medicaid Services. Household consumption expenditures and PCE are part of GDP and the NIPAs of the Bureau of Economic Accounts.

NOTE: The total NHEA health expenditures less total GDP health expenditures difference results from summing all of the detail differences as well as NHE other personal health care and NHE for administration of philanthropy and private research and then subtracting the GDP final consumption expenditures of nonprofit institutions serving households.

Dental services

For 1997–2008, the estimate of HCE for dental services exceeds the estimate of NHE for dental care by $0.7–$2.9, or 2–3 percent (in 2008, $101.2 billion in NHE, compared with $103.5 billion in HCE). Both estimates consist mainly of the sales of offices of dentists (NAICS 6212), as reported by the Economic Census and the Service Annual Survey. The main source of the discrepancy in the two estimates is BEA's adjustments to estimate final commodity demand. CMS makes minor adjustments to its estimates based on data from the consumer price index and current employment statistics from BLS.

Home health care

For 1997–2008, HCE for home health care services exceeds the NHE for home health care by $11.1–$13.4 billion, or 19–41 percent of the NHE estimate (in 2008, $64.7 billion in NHE, compared with $77.9 billion in HCE). Both NHE and HCE for home health care consist mostly of the sales of for-profit and nonprofit home health care agencies (NAICS 6216), as reported by the Economic Census and the Service Annual Survey. Data from the Economic Census and Service Annual Survey only cover private providers of home health care so both agencies add an independent estimate of government provided home health care. The HCE estimate for government sales of home health care is $9–$13 billion, while the NHEA estimate is under $2 billion annually. The HCE estimate includes a net upward adjustment to estimate final commodity demand and the NHE estimate adds other miscellaneous statistical adjustments.

Nursing home care

For 1997–2008, NHE for nursing home care exceeds HCE for nursing home services by $7.1–$11.4 billion annually, or by 7–11 percent (in 2008, $138.4 billion in NHE, compared with $127.0 billion in HCE). Both measures include the sales of nursing care facilities (NAICS 623110) and continuing care retirement communities (NAICS 623311), based on the Economic Census and the Service Annual Survey. The NHE estimate is larger because it includes government outlays for nursing homes operated by the Department of Veterans Affairs and because BEA's adjustments to estimate final demand reduce the estimates of HCE below the level of industry sales. The two accounts also differ in the treatment of expenditures for facilities for persons with developmental disabilities; these estimated expenditures are larger in the GDP data in most years. The NHE estimate includes all Medicaid program spending for Intermediate Care Facilities for the Mentally Retarded. The HCE estimate includes final household demand for the services of residential mental retardation facilities (NAICS 62321), as reported by the Census Bureau.[5]

Hospital care

Almost one-third of health care spending pays for hospital services. For 1997–2008, NHE for hospital care exceeds HCE for hospital services by $16.1–$48.4 billion annually, or 4–8 percent (in 2008, $718.4 billion in NHE, compared with $680.0 billion in HCE). The NHE estimate is relatively higher because it includes government outlays for federal, state, and local government-owned hospitals, while BEA's adjustments to estimate final commodity demand remove a significant amount of hospital spending including nonpatient revenue and revenue for hospital-based home health and nursing home care. The BEA estimate of total spending for nonfederal hospitals is, on the other hand, higher than the CMS estimate: the BEA estimate is based on data from the Census Bureau, while the CMS estimate is based primarily on AHA data.

Prescription drugs

The estimates of both PCE and NHE for prescription drugs are based on the Economic Census and sales data from IMS Health, Inc. Both estimates include sales of drug stores, grocery stores, department stores, mail order, and other retailers. For 1997–2008, the estimates of PCE for prescription drugs are nevertheless $4.5–$19.9 billion, or 4–12 percent, higher than the NHE estimates (in 2008, $234.1 billion in NHE, compared with $244.4 billion in PCE). While both CMS and BEA estimate prescription drug sales by combining estimates of the same two data sources, the two agencies use slightly different methodologies. The PCE estimates are also relatively higher because the NHEA remove manufacturers' rebates and because the PCE estimates include additional prescription drug sales by health care service providers. Only the NHE estimate, on the other hand, adds government outlays for drugs provided by government-owned mail-order facilities.

Nondurable medical products

In both the NHEA and the NIPA PCE estimates, "nondurable medical products" consists of nonprescription

5. CMS does not include nonMedicaid spending for NAICS 63221 because some of the services provided fall outside the current boundary of health care in the NHEA. Both measures of health care spending exclude homes for the elderly (623312) and other residential care facilities (6239). These industries provide residential facilities rather than health care.

drugs, medical sundries, and related products. From 1997–2008, the NHE for nondurable medical goods exceeds PCE for nondurable medical goods by $2.5–$5.8 billion, or 9–27 percent (in 2008, $39.0 billion in NHE, compared with $35.1 billion in PCE). The two estimates have a different methodology for estimating spending for nonprescription drugs, and the NHE estimate is relatively higher. In addition, CMS includes the purchases of a slightly different array of goods.

NHE for durable medical equipment, PCE for therapeutic appliances and equipment

Expenditures in this category represent retail sales of health-related items that have a useful life of more than 3 years, such as contact lenses, eyeglasses and other ophthalmic products, surgical and orthopedic products, medical equipment, and hearing aids. The NHEA estimates are based partly on BEA's benchmark input-output tables and PCE estimates. From 1997–2008, the PCE estimate is $7.2–$18.0 billion, or 40–69 percent, larger (in 2008, $26.6 billion in NHE. compared with $44.6 billion in PCE). Some of the discrepancy arises because only the PCE estimate includes the services of optometrists, which the NHEA classifies as part of other professional services. The remainder is due in large part to a different selection of goods for this category.[6]

Other Health-Related Expenditures

NHE for other personal health care

NHE for other personal health care includes two types of expenditures that are not explicitly reported in the GDP data. Employers spend an estimated $3.6–$6.6 billion per year on industrial inplant services for employees at work. These expenditures are not included in BEA's estimates of health care spending in GDP.[7] Other personal health care also includes "expenditures for medical care not delivered in traditional medical providers sites," which consist of care delivered at homes, community centers, senior citizens centers, schools, and military field stations. One of the largest categories of these expenditures is the Home and Community Waivers programs under Medicaid. Some, but probably not all, of these expenditures appear as part of other categories of health spending in GDP. It seems likely that medical care delivered by nontraditional medical providers is at least partly included in nonhealth categories of expenditures in GDP, such as social assistance.

6. CMS includes an estimate for durable medical equipment rental and oxygen rental.

7. The estimates of these expenditures are based on private surveys, not the Economic Census or the Service Annual Survey.

Net cost of private health insurance

In both the NHE and HCE estimates, the net cost of private health insurance is measured as the difference between premiums (paid by employers and employees) and benefits. HCE for net health insurance services includes accident insurance, income loss, private workers compensation as well as employer-sponsored health insurance premiums (for both private and public sector employees), while the NHE net cost of private health insurance includes the net cost of group, individual, self-insured and the health portion of property and casualty insurance. The net cost of private plans that administer public programs such as Medicare Advantage and Medicaid Health Maintenance Organizations are removed from the NHE estimate (but not the HCE estimate) to avoid double-counting, as these net costs are already counted as administrative costs of government programs. For 1997–2008, the HCE estimate exceeds the NHE estimate by $28.9–$69.8 billion annually, or as much as 85 percent, because of the inclusion of different types of insurance services, the use of different data sources, and the different treatment of the net cost of private plans that administer public programs such as Medicare and Medicaid.

Capital formation—structures and equipment

For 1997–2008, BEA's estimate of investment by business and government in health-related structures and equipment is $4.9–$19.6 billion, or 8–21 percent, higher than CMS's estimate of investment in structures and equipment. Most of the discrepancy between the two estimates of health-related investment arises from a discrepancy in the estimates of investment in private equipment, which are based on different data sources. The two agencies also define investment in equipment in slightly different ways: the NHE estimate includes all capital equipment purchased by medical establishments and is not limited to specific medical equipment or devices, while the GDP estimate measures private investment in all types of health care-related equipment, even if purchased by companies in nonhealth industries. The discrepancies in private investment in structures and government investment in structures and equipment are relatively minor.

Private research and the administration of philanthropic organizations

The NHEA include two categories of spending that are not included in health-related expenditures of GDP. Private noncommercial research spending ($4.7 billion in 2008) includes research performed primarily by universities and other nonprofit medical research organizations and is classified as spending for education

in the GDP data. The administrative costs of philanthropic organizations that pay for health care goods and services ($1.7 billion in 2008) are included as administrative spending in the NHEA.

NPISHs

Only the GDP data include an estimate of final consumption expenditures of nonprofit institutions serving households, or NPISHs. For 1997–2008, the estimate of final consumption expenditures of NPISHs (outpatient services, hospitals, and nursing homes) ranges from roughly zero to $13.5 billion. These estimates are well under the levels of nonpatient revenues reported by nonprofit health care providers, which the NHEA include since some of the nonpatient revenues are used by nonprofit health care providers to offset the expenses of providing health care. Consequently, the different treatment of nonprofit providers in the two accounts may lead to discrepancies in estimates of total health care expenditures.

Government Spending in the NHEA and in GDP

Government consumption, public health, government administration. The remaining expenditures for health care in the two accounts pay for a range of government health-related programs that are not part of the other health-related expenditures. In the NHEA, these remaining expenditures include the administrative expenses of government programs, government public health activity, and government-sponsored research. In the GDP estimates within the NIPAs, these expenditures consist of health-related federal and state and local government consumption expenditures.

Federal government programs. Estimates of federal government consumption expenditures in GDP exceed estimates of the remaining NHE government programs (that is, NHE for administration of government programs, public health programs, and publicly funded research) for 1997–2001. For 2002–2008, the reverse is true. Several categories of expenditures are present in only one of the two measures of federal health expenditures. Some of the health-related federal government consumption expenditures in the GDP estimates are included in NHE for health care goods and services, such as physicians in public clinics (part of physicians and clinical services in the NHEA) and government-owned nursing homes (part of NHE for nursing home care) and hospitals (part of NHE for hospitals). Health-related federal government consumption expenditures in GDP that are excluded from the NHEA include some Environmental Protection Agency-administered programs, government consumption of fixed capital, and some payments for the retirement funds of retired federal health care workers. Only the NHEA estimate, on the other hand, separately identifies some health-related Department Of Defense (DOD) spending (counted as defense spending in GDP) and spending for federal research grants (counted as spending for education in GDP) and the net cost of private insurance plans that administer portions of the Medicare, Medicaid, Children's Health Insurance Program, and DOD and Department of Veterans Affairs programs.

State and local government programs. For 1997–2008, NHE for the state and local government health care programs (NHE for administration of government programs, public health programs, and publicly funded research) exceeds state and local government consumption expenditures for health in GDP by $20.2–$31.6 billion annually. Only the NHEA estimate includes state and local government research funding and the private net cost of public programs administered by private plans. Only the estimate of health-related government consumption expenditures in GDP includes an estimate of the government consumption expenditures of government health care providers, such as home health care providers and hospitals that sell services to households (these types of sales are included in the NHEA estimates for these industries). BEA estimates these government consumption expenditures as gross output (total expenses) less sales (which are classified as HCE or intermediate sales).

Conclusion

This reconciliation of estimates of annual health care expenditures in the NHEA and the GDP estimates shows that the two measures capture many similar types of spending for health care goods and services. However, the estimates of specific categories of health expenditures in the two accounts differ for several key reasons. BEA and CMS have slightly different rules for classifying goods and services in categories of health-related (and nonhealth-related) spending. The two accounts measure and classify expenditures for government-owned and nonprofit health care providers in different ways. BEA makes several adjustments to estimate final commodity demand by households, while the NHEA remains mostly on an industry basis. In some cases, BEA and CMS rely on different data sources.

Many of the discrepancies in categories of health care spending reflect different rules for classifying similar expenditures; as a result, these discrepancies cancel

one another in the summation of total health care spending. CMS and BEA have fairly similar estimates of spending for the sum of physician services, medical labs, and other professional medical services, dental services, home health care services, and nursing home services because those estimates are mostly based on the same source data from the Census Bureau. The estimates of spending for hospitals, retail prescription drugs, nondurable goods, and durable goods also reflect broadly similar definitions and concepts, although some differences in data sources, definitions, and methods contribute to important differences in the estimates. The hospital estimate, in particular, contributes to a large share of the overall difference in estimates of health spending; BEA excludes nonpatient revenues and outlays for DOD and other government hospitals, and CMS and BEA use different data sources. The GDP data have a larger estimate of the net cost of health insurance because CMS and BEA have different data sources and use different definitions of health insurance services.

Additionally, several expenditures in the NHEA are not counted in health-related expenditures for GDP. For example, only the NHEA separately identify some DOD expenditures, and at least some of NHE for other personal health care appears to be counted as expenditures in GDP for nonhealth commodities, such as social assistance. Other health-related expenditures in GDP, such as the nonhealth portion of workers compensation, are not counted in the NHEA. Additional details can be found in the working paper produced by BEA and CMS.

This work also raises several topics for further research, such as the reasons for differences in estimates of spending for hospital care, the treatment of many government programs in the two accounts, the measurement of private investment in equipment in the two accounts, and the nature of services funded by other personal health care services in the NHEA. This reconciliation explains many of the similarities and differences in the estimates of health expenditures in the NHEA and GDP statistics and hopefully enables analysts to choose which measure of health care expenditures is most appropriate for their purposes.

References

Aizcorbe, Ana M., Bonnie A. Retus, and Shelly Smith. 2008. "Toward A Health Care Satellite Account." SURVEY OF CURRENT BUSINESS 88 (May): 24–30.

American Hospital Association. 2009. *Uncompensated Hospital Care Cost Fact Sheet.* November.

Baker, Bruce E., Pamela A. Kelly, and Brooks B. Robinson. 2004. "Estimates of Real Government Consumption Expenditures and Gross Investment by Function for 1959–2003." SURVEY OF CURRENT BUSINESS 84 (October): 5–10

Bureau of Labor Statistics. 2008. "Producer Prices," In *BLS Handbook of Methods.* Washington, DC: Government Printing Office; www.bls.gov/opub/hom/pdf/homch14.pdf.

Census Bureau. 2005. *Product Lines:* 2002. 2002 Economic Census: Health Care and Social Assistance. Subject Series EC02–62SL–LS; www.census.gov/prod/ec02/ec0262slls.pdf.

Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group. 2010. *National Health Expenditure Accounts Data;* www.cms.gov/NationalHealthExpendData.

European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, and World Bank. 2009. *System of National Accounts 2008* New York: United Nations, 2009

Grimm, Bruce T., Brent R. Moulton, and David B. Wasshausen. 2002. "Information Processing Equipment and Software in the National Accounts." BEA working paper. Washington, DC: Bureau of Economic Analysis.

Hartman, Micah B., Robert J. Kornfeld, and Aaron C. Catlin. 2010. "Health Care Expenditures in the National Health Expenditures Accounts and in Gross Domestic Product: A Reconciliation." BEA working paper. Washington, DC: Bureau of Economic Analysis.

Ho, Mun S., and Dale W. Jorgenson. 2005. "The National Health Accounts, the National Income and Product Accounts, and Input-Output Accounts: Constructing Accounts for Health Expenditures in the Information Age." John F. Kennedy School of Government working paper. Cambridge, MA: Harvard University.

Horowitz, Karen J., and Mark A. Planting. 2009. *Concepts and Methods of the U.S. Input-Output Accounts.* Washington, DC: Bureau of Economic Analysis, April; www.bea.gov/papers/pdf/IOmanual_092906.pdf.

Mandel, Benjamin A., and Bryan A. Williams. 2009. "NIPA Translation of the Fiscal Year 2010 Federal Budget." SURVEY OF CURRENT BUSINESS 89 (June): 15–24.

McCully, Clinton P., and Steven Payson. 2009. "Preview of the 2009 Comprehensive Revision of the NIPAs: Statistical Changes." SURVEY OF CURRENT BUSINESS 89 (May): 6–16.

McCully, Clinton P., and Teresita D. Teensma. 2008. "Preview of the 2009 Comprehensive Revision of the

National Income and Product Accounts: New Classifications for Personal Consumption Expenditures." Survey of Current Business 88 (May): 6–17.

Office of Management and Budget. *North American Industry Classification System, 2007*. 2007. Lanham, MD: Bernan; www.census.gov/eos/www/naics.

Organisation for Economic Co-operation and Development (OECD). 2000. *A System of Health Accounts*. Paris: OECD.

Sensenig, Arthur L., and Ernest Wilcox. 2001. "National Health Accounts/National Income and Product Accounts Reconciliation: Hospital Care and Physician Services." In *Medical Care Output and Productivity,* ed. David M. Cutler and Ernst R. Berndt, 271–302. Chicago: University of Chicago Press.

Truffer, Christopher J., Sean Keehan, Sheila Smith, Jonathan Cylus, Andrea Sisko, John A. Poisal, Joseph Lizonitz, and M. Kent Clemens. 2010. "Health Spending Projections Through 2019: The Recession's Impact Continues." *Health Affairs* 29 (March): 522–529.