

# Refining Estimates of Public Health Spending as Measured in National Health Expenditures Accounts: The United States Experience

Arthur L. Sensenig

---

Providing for the delivery of public health services and understanding the funding mechanisms for these services are topics of great currency in the United States. In 2002, the Department of Homeland Security was created and the responsibility for providing public health services was realigned among federal agencies. State and local public health agencies are under increased financial pressures even as they shoulder more responsibilities as the vital first link in the provision of public health services. Recent events, such as hurricanes Katrina and Rita, served to highlight the need to accurately access the public health delivery system at all levels of government. The National Health Expenditure Accounts (NHEA), prepared by the National Health Statistics Group, measure expenditures on healthcare goods and services in the United States. Government public health activity constitutes an important service category in the NHEA. In the most recent set of estimates, Government Public Health Activity expenditures totaled \$56.1 billion in 2004, or 3.0 percent of total US health spending. Accurately measuring expenditures for public health services in the United States presents many challenges. Among these challenges is the difficult task of defining what types of government activity constitute public health services. There is no clear-cut, universally accepted definition of government public health care services, and the definitions in the proposed International Classification for Health Accounts are difficult to apply to an individual country's unique delivery systems. Other challenges include the definitional issues associated with the boundaries of healthcare as well as the requirement that census and survey data collected from government(s) be compliant with the Classification of Functions of Government (COFOG), an

internationally recognized classification system developed by the United Nations.

**KEY WORDS:** essential public health functions, local governments, national health expenditures, public health

Government spending on public health activity is currently receiving more scrutiny than at perhaps any other time in the recent history of the United States. "For all the talk of pandemic preparedness, hurricane preparedness and terrorism preparedness, one obvious fundamental kind of preparedness has been strangely overlooked—namely the preparedness of the public health system."<sup>1(p16)</sup> This article provides some information on how the estimates of expenditures for government public health activity are prepared; describes the challenges associated with preparing these estimates, and makes some suggestions on future data development activity that could lead to improved estimates of expenditures for government public health activity.

The National Health Expenditure Accounts (NHEA) measure the amount spent on healthcare in the United States. The NHEA are prepared and maintained by the National Health Statistics Group in the Office of the Actuary, at the Centers for Medicare & Medicaid Services. Measuring the amount spent on government public

---

This article has benefited from the support, direction, comments, and suggestions of staff of the Centers for Medicare & Medicaid Services, especially Stephen Heffler, John Poisal, Aaron Catlin, and Cathy Cowan, as well as from the support of Peggy Honoré, Director, Office of Health, Mississippi State Department of Health.

The views expressed in this article are those of the author and do not necessarily reflect the views of the Centers for Medicare & Medicaid Services.

Corresponding author: Arthur L. Sensenig, MA, 7500 Security Blvd, Mail Stop N3-02-03, Baltimore, MD 21244 (e-mail: Arthur.Sensenig@CMS.HHS.GOV).

---

**Arthur L. Sensenig, MA**, is an economist with the National Health Statistics Group, Office of the Actuary, Centers for Medicare & Medicaid Services, US Department of Health and Human Services.

health activity is an integral part of the task of estimating total national health expenditures. In the most recent release of the NHEA, total government public health activity was estimated at \$56.1 billion or \$188 per capita in 2004, representing 3.0 percent of total US health expenditures. Of this amount, \$9.1 billion was attributable to federal government public health activity; the remaining \$47.0 billion was attributable to the government public health activities of state and local governments.<sup>2</sup>

Estimating government public health activity in the United States presents many challenges. One challenge results from the lack of a universally accepted definition of public health activity. Other challenges can be attributed to difficulties associated with the accounting and classification systems used by governments in the United States to record expenditures on public health activity and with the methodology used to prepare the NHEA estimates. Perhaps, the greatest challenge is the lack of applicable data on expenditures for public health activities by state and local governments. This article describes the conceptual challenges associated with national economic accounting and national health expenditure accounting methods, as well as challenges associated with the use of administrative records and budgetary data, and the lack of appropriate expenditure data. The article concludes with some suggestions on data development to improve the estimates of government public health activity in the NHEA.

## ● National Economic Accounting and the NHEA

The old joke about the economics profession—that there are only two people in the whole world who really understand economics; and they don't agree—could easily have been written about the economists charged with defining the lexicon of terms associated with national health expenditure accounting. One of the first challenges in constructing any economic accounting system is defining the terms used to describe the actors and the activities being measured. Terms like public, private, goods, services, provider, and producer are used in a fairly straightforward fashion in everyday conversation, yet these and many other terms must be precisely defined when used to represent the entities, activities, and transactions measured in a national economic accounting system. Similarly, when researching the topic of public health, one encounters considerable ambiguity and overlap regarding the definitions of public healthcare, public health services, the public health system, and the public health infrastructure. Examining the current release of the NHEA one would see that in 2004 governments (federal, state, and local)

funded 45 percent of all healthcare expenditures in the United States, yet that same year government public health activity accounted for less than 7 percent of total government healthcare spending. To explain the challenges of measuring government public health activity, we must first describe the definitions, conventions, and economic measurement theory that are the underpinnings of national health expenditure accounting.

In the United States, the national economic accounts are composed of three separate sets of accounts. The Input/Output Accounts and the National Income and Product Accounts are prepared and maintained by the Commerce Department's Bureau of Economic Analysis. The Board of Governor's of the Federal Reserve System is responsible for the third set of accounts known as the Flow of Funds accounts. It is the National Income and Product Accounts that are most directly related to the NHEA. "The National Income and Product Accounts (NIPAs) are the comprehensive set of accounts that measure the total value of final goods and services (gross domestic product or GDP) produced by the US economy and the total of incomes earned in producing that output (Gross Domestic Income or GDI)."<sup>3(p6)</sup>

Internationally accepted principles and conventions for national economic accounting are codified in the System of National Accounts (SNA),<sup>4</sup> which has been accepted and endorsed by the United Nations and several other international organizations. One SNA convention applicable to national health expenditure measurement is the distinction between individual services and collective services. The distinction between the acquisition of individual services and collective services (in this case public health services) is key to determining which government activities should be defined as public health activity—as opposed to government provision of personal healthcare services.<sup>5</sup> The SNA defines a collective (public) service by three characteristics:

1. Collective services can be delivered simultaneously to every member of the community or of particular sections of the community such as those in a particular region or a locality.
2. The use of such services is usually passive and does not require the explicit agreement or active participation of all the individuals concerned.
3. The provision of a collective service to one individual does not reduce the amount available to others in the same community or section of the community. There is no rivalry in acquisition.\*

As it will become clear later, this distinction (while admittedly tendentious) is important for determining

\*For a detailed discussion of private and public goods in an economic accounting construct, see the SNA, chapter IX: "The use of income account," especially paragraphs 9.45 to 9.87.

what is *public* about public health services. Governments can, and frequently do, provide personal health-care services to individuals or groups of individuals; however, these goods and services, although *publicly provided*, do not constitute public health services. The distinction is even more important when considering the problems of estimating expenditures for public health activity in the aggregate; one cannot simply add up the outlays or expenditures of federal public health service agencies or of state or local government public health departments to estimate the cost of government public health activity. How to recognize and record the distinction between personal healthcare and population-based public health services<sup>6</sup> is a significant issue in measuring expenditures for government public health activity in the NHEA.

The task of estimating national health expenditures must also be informed by a second set of economic accounting conventions particular to the healthcare sector. For these conventions, we refer to *A System of Health Accounts*<sup>7</sup> (SHA), developed and maintained by the Organization for Economic Cooperation and Development. The SHA contains economic accounting principles, definitional conventions, classification schemes, and functional boundaries applicable for measuring the activities of a nation's healthcare industry. In the discussion that follows, we highlight those aspects of the SHA that apply to the definition and measurement of government public health activity.

The SHA establishes the basic functional and global boundaries of healthcare via a series of definitions and classification systems. The most important of which may be the following definition of "health care":

Activities of health care in a country comprises the sum of activities performed either by institutions or by individuals pursuing, through the application of medical, paramedical, and nursing knowledge and technology, the goals of:

- promoting health and preventing disease;
- curing illness and reducing premature mortality;
- caring for persons affected by chronic illness who require nursing care;
- caring for persons with health-related impairment, disability, and handicaps who require nursing care;
- assisting patients to die with dignity;
- providing and administering public health;
- providing and administering health programs, health insurance, and other funding arrangements.<sup>7(p42)</sup>

The SHA establishes a tri-axial classification system for categorizing a nation's healthcare expenditures along different dimensions by means of the International Classification for Health Accounts (ICHA). These are (1) healthcare *by function* (ICHA-HC), (2) healthcare

*by service provider* industries (ICHA-HP), and (3) healthcare *by sources of funding* (ICHA-HF).<sup>7(pp12-13)</sup> The basic dividing lines for structuring the ICHA-HC functional classification above are *personal* versus *public* health services, basic purposes of care (curative, rehabilitative, and long-term care) and modes of production (inpatient, outpatient, etc) [emphasis added].<sup>7(p45)</sup> At present, the NHEA is a two-dimensional classification system showing health expenditure by *service* (roughly equivalent with ICHA-HP) and by *source of funds* (roughly equivalent to ICHA-HF).

The SHA qualifies the production and consumption boundaries for healthcare by establishing what kinds of producers are included and what types of goods and services, public and private, are included in healthcare.

... [in the context of] the SHA, general public safety measures like technical standards monitoring, road safety, etc., are not considered as application of medical technology and are, for that reason, excluded from the core health care functions. Food and hygiene monitoring, as well as surveillance of drinking water are, however, overlapping functions between safety and health and are covered under separate reporting categories in the ICHA-HC as *health-related* functions for separate reporting as memorandum items. These functions *are not included* in total expenditure on health in the SHA [emphasis added].<sup>7(p42)</sup>

## ● Challenges of Estimating Government Public Health Activity

In the previous section, we established that there are internationally accepted standards and conventions for national economic accounting; that there are widely accepted definitions in economic literature for public and private services; and that there is a well-established, widely recognized set of economic boundaries applicable to the health sector. In short, we defined the healthcare sector and collective services. In this section, we turn to the challenges associated with measuring government public health activity.

### Lack of universally accepted definition of public healthcare

The first challenge to estimating government public health activity is that there is no universally accepted definition of what kinds of activities constitute government public health activity. The Organization for Economic Cooperation and Development, the World Health Organization, the United Nations, the Centers for Disease Control and Prevention, the Public Health Service, and other groups within the public health community have differing definitions of public health, public health services, government public health activities, and public health functions. Some include personal

healthcare services delivered by public health agencies as essential functions of public healthcare; others include only population-based services in their definitions. Some include population-based environmental health services undertaken by government agencies not classified as public health agencies, others do not. This lack of a clear-cut, universally accepted definition of what kind of medical activities constitute public health services complicates the task of estimating government public health activity in the NHEA, as well as any data development activities undertaken in this regard by federal statistical agencies.

In the SHA classification of healthcare, the ICHA-HC, or functional classification, is the most germane to our search for a common definition of public health services and government public health activity. The ICHA-HC identifies five functions of healthcare that are classified as *personal* healthcare services and goods: Services of curative care (HC.1); Services of rehabilitative care (HC.2); Services of long-term nursing care (HC.3); Ancillary services to healthcare (HC.4); and Medical goods dispensed to outpatients (HC.5.) The remaining two functions are classified as collective healthcare services: Prevention and public health (HC.6) and Health administration and health insurance (HC.7). These latter two functions (arguably) meet the economic accounting criteria for public goods. The remaining classification, health-related functions (HCR.1–HCR.7) consist mainly of those functions that were defined outside the global boundaries of healthcare, such as food, hygiene, and drinking water control.<sup>7(p43)</sup>

Function HC.6 Prevention and Public Health is further broken down into the following subcategories:

- HC.6.1 Maternal and child health; family planning, and counseling
- HC.6.2 School health services
- HC.6.3 Prevention of communicable diseases
- HC.6.4 Prevention of noncommunicable diseases
- HC.6.5 Occupational healthcare
- HC.6.9 All other miscellaneous public health services

The SHA provides a full description of the activities that are included in and excluded from each of these HC.6 two-digit categories. Without reproducing the entire description of each category here, it is sufficient to note that these definitions identify those healthcare services that are directed at populations (prevention of diseases) or segments of populations (maternal and child health and occupational healthcare). By characterizing both population-based health services and healthcare services delivered to segments of populations—health services that are defined as personal healthcare in the NHEA, the SHA blurs the theoretical economic distinction between public services and individual services

described in the “National Economic Accounting and the NHEA” section.

The SHA offers some guidance on two boundary issues that present some difficulty in measuring government public health activity in the United States. The first is the boundary between healthcare services and other social services.<sup>7(p129)</sup> The definition suggested here is one of “primary activity,” that is, to be considered a healthcare service, the medical component of the service must comprise the majority of the cost of providing the service. This boundary issue applies mainly in institutional settings, where long-term healthcare is delivered along with social services. The second boundary issue is that of the borderline between public health and other government functions. In this instance the SHA guidance is as follows:

A wide range of government functions outside of health care deal with public safety and the protection of population health. For health accounting, the organization and performance of these services has to be separated from the health care function. Ambulance and rescue services of a general nature, but organized by fire-protection services, belong to health care. Base hospitals belong to the health care function, not the military or civil defense. Medical facilities reserved for war or peacetime disaster, on the other hand, belong to public safety or the military or defense function. A range of public safety measures (road and vehicle safety, construction and housing standards, veterinarian services, and product safety monitoring) are in some countries administered by public health authorities but are not included in the SHA boundaries of healthcare.<sup>7(p130)</sup>

The distinction between government public health and other government functions is extremely difficult to determine in many budgetary sources, as funds are generally appropriated programmatically as opposed to functionally. We describe this problem in more detail below. However, this borderline issue is at the root of many difficulties in the definition of government public health activity.

The *10 Essential Public Health Services*<sup>8</sup> were used as the definition of public health services in two important studies. The first, *Measuring Expenditures for Essential Public Health Services*<sup>9</sup> released in November 1996, estimated expenditures for the 10 essential services by federal and state public health agencies. This report highlights the distinction between population-based health services and direct personal health services. The second report, *Measuring Expenditures for Personal Health Care Services Rendered by Public Health Departments*,<sup>10</sup> further developed estimates of personal healthcare services delivered by public health departments at the federal and state levels. Distinguishing between personal health services and population-based health<sup>6(p23)</sup> services poses one of the more difficult problems

encountered when estimating expenditures for government public health activity in a national health expenditure accounting framework. These studies and the NHEA methodology are discussed further in the “Suggestions for Data Development” section.

There is one more classification system to consider before we analyze the differences between the many commonly used definitions of public health services. This system was produced and is maintained by the Statistics Division of the United Nations, and is called the Classification of Functions of Government (COFOG), part of the United Nations Classification of Expenditure According to Purpose reference registry. The purpose of COFOG is “to classify the purpose of transactions such as outlays on final consumption expenditure, intermediate consumption, gross capital formation and capital and current transfers, by general Government.”<sup>11</sup> There are 10 division-level classifications in the COFOG: 01, General public services; 02, Defense; 03, Public order and safety; 04, Economic affairs; 05, Environmental protection; 06, Housing and community amenities; 07, Health; 08, Recreation, culture, and religion; 09, Education; and 10, Social protection.

Division 07 Health is subdivided into six categories as follows:

- 07.1 Medical products, appliances, and equipment
- 07.2 Outpatient services
- 07.3 Hospital services
- 07.4 Public health services
- 07.5 R&D health
- 07.6 Health NEC

Not all activities that would commonly be considered public health services are classified in this division and activities that are not commonly associated with healthcare are classified within this division. One example of this would be environmental monitoring activities that are classified in 05 “Environmental protection.” Another example, Emergency Disaster Services, one of the public health functions named in the *Essential Public Health Functions (EPHFs)* is classified in COFOG under 03 Public order and security. Many other health or health-related activities are similarly cross-classified. The extent of this problem is evident in the SHA cross-classification of three systems for defining public health services—EPHFs, the ICHA-HC, and COFOG.\*

\*For purposes of comparison, the Organization for Economic Cooperation and Development synthesized EPHF categories from different sources to a list of nine EPHFs. The World Health Organization, the US Public Health Service, and the US Centers for Disease Control all have slightly different lists with the number of EPHFs varying from 9 to 11. This comparison is available at: <http://www.oecd.org/dataoecd/3/42/1896876.pdf>.

### Difficulty of matching the NHEA methodology with administrative record systems and budgetary data

The second challenge in estimating government public healthcare activity in the NHEA relates to the existing NHEA methodology, the federal administrative record system on which the methodology is based, and the reporting system for federal budget. The federal administrative record system is based for the most part on existing classification structures—such as the North American Industrial Classification System—and on the needs of the agencies that collect the data to administer specific programs. Data on outlays by federal agencies are published annually in the *Appendix to the Budget of the United States*. Actual and projected outlays are enumerated by Identification Codes, which identify the Department, Agency, Appropriations Act, as well as the pertinent general provisions and program-specific purposes of the outlays. Administrative and budgetary records do not necessarily classify the function of these outlays. For this reason, the NHEA methodology adopted for federal government public health activity must infer the function (public health activity) from the descriptions of the outlays in the budget.

It is important to note that the United States Department of Health and Human Services has published an annual series of statistics presenting total national health expenditures since 1964. These estimates have consistently contained a time series on “government public health activities” at the federal and the state and local levels. The estimating methodologies employed in the NHEA (prior to 2005, called National Health Accounts) predate any of the classification systems discussed earlier—EPHFs, COFOG, or SHA. Yet, the definition of government public health activity (shown below) may be a step toward developing the kind of definition that could be universally adopted in national health accounting practice.

Spending for healthcare goods and services is measured at three levels of aggregation in the NHEA.

1. *Personal Health Care Expenditures (PHCE)* is composed of expenditures for therapeutic goods or services rendered to treat or prevent a specific disease or condition in a specific person. In the NHEA, this spending is broken down by type of provider (hospital services, physician services, etc) and source of funding (private health insurance, Medicare, Medicaid, etc).
2. *Health Services and Supplies (HSS)* is the sum of PHCE, *government public health activity*, and program administration (which includes the net cost of private health insurance). It represents spending for medical care rendered during the year.

**TABLE 1 ● Derivation of National Health Expenditures (in million \$): Selected Calendar Years 1960–2004\***

Category	1960	1970	1980	1990	2000	2001	2002	2003	2004
<i>Personal Health Care Services</i>									
Hospital care	9,179	27,589	101,008	251,551	417,049	451,440	488,604	525,453	570,756
Physician and clinical services	5,354	13,981	47,071	157,532	288,587	313,143	337,854	367,015	399,883
Dental services	1,963	4,669	13,323	31,502	61,975	67,523	73,341	76,861	81,532
Other professional services	392	744	3,609	18,170	39,111	42,809	45,658	49,087	52,720
Other personal healthcare	616	1,246	3,256	9,560	37,076	41,884	46,337	50,370	53,272
Home health	57	220	2,377	12,567	30,560	32,244	34,299	38,121	43,181
Nursing home care	812	4,040	19,023	52,623	95,269	101,526	105,730	110,442	115,210
Prescription drugs	2,676	5,497	12,049	40,290	120,803	138,559	157,941	174,112	188,452
Other nondurable medical goods	1,625	3,325	9,801	22,452	30,165	30,306	30,857	32,147	32,284
Durable medical equipment	646	1,632	3,814	11,223	19,330	19,637	20,752	22,078	22,951
<i>sum equals</i>									
Personal Health Care Expenditures (PHCE)	\$23,320	\$62,943	\$215,330	\$607,470	\$1,139,925	\$1,239,071	\$1,341,372	\$1,445,684	\$1,560,242
<i>plus</i>									
Government administration and net cost of private health insurance	1,211	2,770	12,213	39,241	81,241	89,644	106,104	124,856	136,654
<i>and</i>									
<i>Government public health activity</i>	417	1,393	6,434	19,959	43,364	46,791	51,680	53,966	56,117
Federal	102	594	1,235	2,258	5,068	5,410	7,527	8,627	9,119
State and local	315	799	5,199	17,701	38,296	41,381	44,153	45,339	46,998
<i>equals</i>									
Health Services and Supplies (HSS)	\$24,948	\$67,105	\$233,977	\$666,671	\$1,264,530	\$1,375,506	\$1,499,157	\$1,624,507	\$1,753,013
<i>plus</i>									
Non-commercial research	694	1,953	5,429	12,678	25,599	28,754	32,548	35,628	38,952
<i>and</i>									
Medical sector capital investment	1,945	6,053	15,466	37,993	68,380	69,909	76,237	80,462	85,657
<i>equals</i>									
National Health Expenditures (NHE)	\$27,588	\$75,111	\$254,872	\$717,342	\$1,358,510	\$1,474,169	\$1,607,942	\$1,740,597	\$1,877,622
Addenda: Government Public Health Activity as a percentage of NHE	1.5	1.9	2.5	2.8	3.2	3.2	3.2	3.1	3.0

\*From the Centers for Medicare & Medicaid Services, Office of the Actuary. Data from the National Health Statistics Group; 2006.

3. *National Health Expenditures (NHE)* is the sum of all healthcare expenditures, is composed of HSS plus *Investment*—the sum of the noncommercial research and the capital formation estimates.<sup>12</sup>

Table 1 shows the dollar amounts of these aggregations.

The NHEA are structured to delineate expenditures by services and by the source of funds for these expenditures. The source of funds breakdown is extremely important as a gauge of the government share of total expenditures for healthcare. This is true at all levels of aggregation in the NHEA. The accounts have detailed estimates of the source of funds of each service in PHCE. Not only do the NHEA break the source of funds into private and government spending, federal and state and local programs detail the government breakdown as well. The source of funds breakdown is

extremely important when considering the NHEA estimates of government public health activity, because some federal sources of funds, such as the Substance Abuse Mental Health Services Administration spending funds, are attributed to personal healthcare services, not government public health activity.

Table 2 shows the source of funds detail for PHCE in the NHEA. The bolded sources of funds in the table show which components would be classified as public health expenditures under an EPHF-type categorization. The italicized sources of funds show which components would also be included, in whole or in part, in the SHA categorization. If a combination of both the EPHF and the SHA categorization schemes were to be adopted in the NHEA, public expenditures for PHCE would be limited to care funded by government insurance programs—Medicare, Medicaid, SCHIP, workers compensation insurance, and temporary

**TABLE 2 • Derivation of Personal Healthcare Expenditures (in million \$): 1994–2004\***

Levels in \$millions	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<i>Total Personal Health Care</i>	814,390	863,709	910,273	959,805	1,010,518	1,068,349	1,139,925	1,239,071	1,341,372	1,445,684	1,560,242
<i>Private funds</i>	453,717	478,887	500,764	533,683	575,155	613,089	652,180	697,071	750,773	807,103	867,845
Consumer payments	413,612	434,545	453,505	482,090	519,833	555,634	595,354	640,804	692,621	743,341	799,198
Other private funds	40,105	44,342	47,260	51,593	55,323	57,454	56,826	56,267	58,151	63,763	68,647
<i>Public funds</i>	360,674	384,822	409,508	426,122	435,362	455,261	487,746	542,001	590,599	638,581	692,397
Federal funds	272,826	293,526	316,642	329,495	332,645	347,008	371,132	413,318	450,411	489,445	529,206
Medicare	162,271	177,839	194,478	204,375	202,790	206,429	217,402	240,539	258,218	275,891	299,569
Workers' compensation	574	545	535	534	534	562	620	658	692	707	695
Public assistance	77,583	81,941	87,831	90,709	93,666	101,945	111,445	125,843	140,040	154,318	165,084
Medicaid (Title XIX)	77,583	81,941	87,831	90,709	93,464	101,003	109,728	123,323	136,713	150,526	160,596
Medicaid SCHIP expansion (Title XIX)					99	384	662	778	875	1,018	1,083
SCHIP (Title XXI)					103	558	1,055	1,743	2,452	2,774	3,404
Department of Defense	11,663	11,827	11,756	11,795	11,918	12,266	13,255	14,782	17,670	20,434	22,605
<b>Maternal and Child Health</b>	<b>589</b>	<b>584</b>	<b>576</b>	<b>578</b>	<b>585</b>	<b>599</b>	<b>606</b>	<b>615</b>	<b>632</b>	<b>631</b>	<b>629</b>
<i>Veterans' Administration</i>	14,326	14,557	15,276	15,202	16,034	17,262	18,811	20,783	22,469	26,164	28,750
<i>Vocational Rehabilitation</i>	244	245	236	246	253	259	281	304	316	321	332
<b>Gen Hosp/Med NEC</b>	<b>2,377</b>	<b>2,473</b>	<b>2,729</b>	<b>3,030</b>	<b>3,314</b>	<b>3,766</b>	<b>4,393</b>	<b>5,172</b>	<b>5,570</b>	<b>5,873</b>	<b>6,102</b>
<b>ADAMHA/SAMHSA</b>	<b>1,832</b>	<b>2,016</b>	<b>1,748</b>	<b>1,469</b>	<b>1,988</b>	<b>2,306</b>	<b>2,591</b>	<b>2,706</b>	<b>2,887</b>	<b>3,072</b>	<b>3,274</b>
<b>Indian Health Services</b>	<b>1,365</b>	<b>1,500</b>	<b>1,476</b>	<b>1,556</b>	<b>1,563</b>	<b>1,614</b>	<b>1,726</b>	<b>1,916</b>	<b>1,917</b>	<b>2,035</b>	<b>2,166</b>
<i>State and local funds</i>	87,848	91,296	92,867	96,627	102,717	108,253	116,613	128,683	140,188	149,136	163,191
Temporary disability	53	52	54	58	54	49	48	62	84	84	90
Workers' compensation	16,396	15,949	15,774	16,438	17,272	17,704	18,934	20,439	22,374	23,368	24,835
Public assistance	54,724	59,746	62,094	65,107	69,761	74,628	81,965	91,510	100,341	106,899	117,827
Medicaid (Title XIX)	49,273	54,309	56,679	59,939	64,742	70,338	77,244	85,560	93,946	99,894	110,445
Medicaid SCHIP Expansion (Title XIX)					38	146	256	311	351	421	469
SCHIP (Title XXI)					52	270	489	779	1,072	1,109	1,229
<b>General assistance</b>	<b>5,451</b>	<b>5,437</b>	<b>5,414</b>	<b>5,167</b>	<b>4,928</b>	<b>3,874</b>	<b>3,975</b>	<b>4,860</b>	<b>4,971</b>	<b>5,475</b>	<b>5,684</b>
<b>Maternal and Child Health</b>	<b>1,427</b>	<b>1,472</b>	<b>1,533</b>	<b>1,624</b>	<b>1,687</b>	<b>1,807</b>	<b>1,934</b>	<b>1,910</b>	<b>1,899</b>	<b>1,936</b>	<b>1,941</b>
<i>Vocational rehabilitation</i>	80	80	80	81	81	85	92	96	95	96	100
<b>St/L Hosp + School Hlth</b>	<b>15,168</b>	<b>13,997</b>	<b>13,333</b>	<b>13,320</b>	<b>13,861</b>	<b>13,980</b>	<b>13,640</b>	<b>14,666</b>	<b>15,396</b>	<b>16,753</b>	<b>18,399</b>
Addenda: Sum of Personal Health Care funds that would be classified as public health spending under "Essential Public Health Functions" definitions.											
Total	28,210	27,479	26,809	26,745	27,926	27,945	28,866	31,845	33,271	35,775	38,194
Federal	6,164	6,573	6,529	6,634	7,450	8,284	9,317	10,409	11,006	11,610	12,171
State and local	22,046	20,906	20,280	20,111	20,476	19,661	19,549	21,436	22,265	24,164	26,023

\*From the Centers for Medicare & Medicaid Services, Offices of the Actuary. Data from the National Statistics Group.

disability insurance. A change in categorization of this nature would radically alter the ratio of private and public financing for many personal healthcare services—hospital services for example—as well as total PHCE in the United States.\*

The current NHEA definition of government public health activity,<sup>13</sup> as published on the Centers for Medicare & Medicaid Services Web site, is as follows:

In addition to funding the health care of individual citizens, governments are involved in organizing and delivering publicly provided health services such as epidemiological surveillance, inoculations, immunization/vaccination services, disease prevention programs, the operation of public health laboratories, and other such functions. In the NHEA, spending for these activities is reported in government public health activity. Funding for health research and government purchases of medical structures and equipment are reported in their respective categories. Government spending for public works, environmental functions (air and water pollution abatement, sanitation and sewage treatment, water supplies, and so on), emergency planning, and other such functions are not included.

Most Federal government public health activity emanates from the Department of Health and Human Services. The Food and Drug Administration and the Centers for Disease Control account for an overwhelming majority of Federal spending in the area. Since the 9/11 catastrophe, substantial public health funding has come from two other sources: The Public Health and Social Services Emergency Fund, a part of the HHS Departmental Management Budget, and the Department of Homeland Security.

State and local government public health activity expenditures are primarily for the operation of State and local health departments. Federal payments to State and local governments are deducted to avoid double counting, as are expenditures made through the Maternal and Child Health Program and the Crippled Children's Program. State and local government departments for environmental functions (water and sewer authorities, for example) are not included.<sup>13(p12)</sup>

There are two basic data sources for the government public health activity. Federal spending is taken from annual budget documents prepared by the various agencies and summarized in the Budget of the United States (Executive Office of the President, 1960–2004). State and local government spending is estimated using data from the Bureau of the Census (1957, 1962, 1967, 1972, 1977, 1982, 1987, 1992, 1997, and 2002) quinquennial (5-year) Census of Governments and from its annual survey of state and local government finances; the latter surveys, all state governments, and a sample

of local government units drawn from the 5-year census (Bureau of the Census, 1960–2003). The most recent year's estimates (2004) are prepared by extrapolating the 2003 estimates by the change in total state and local government expenditures.

The use of federal government budget data is consistent with the methodology used in compiling estimates of federal spending in the National Income and Product Accounts, as well as with advice provided to members of the European Union on implementing the SHA.<sup>14</sup> National economic accounts and national health expenditure frequently use administrative records as source data because the data are accurate, highly detailed, come from unbiased sources, and are inexpensive to obtain. Statistical agencies charged with producing estimates of a wide variety of activities often use administrative data, both budgetary and programmatic (Social Security, Medicare, Internal Revenue Statistics, etc) for these reasons. The last point is not insignificant. These data are already collected (and paid for by the taxpayer) to administer programs. Use of these data for national economic accounting is a bonus. Compared with the cost of conducting a census or survey, use of administrative data sources saves a great deal of money. Administrative data and budgetary data have other advantages: (a) the data are usually accurate and independently audited, (b) the universe of the data may be completely enumerated, and (c) the data are useful for cross-checking results. There are also some disadvantages to the use of administrative and budgetary data: (a) the data may not be expressed in dollars, or even relate closely to actual expenditures, (b) the data may not be continuous through time, but reflect information requirements at a single point in time, and (c) collection of administrative data will almost certainly be designed for another purpose, so *definitions will not match* [emphasis added].<sup>14(p65)</sup>

The difficulties involved in preparing the NHEA federal government public health activity are representative of those posed in these general guidelines. First, there are no uniform definitions of public health activity. Consequently, each year's federal budget must be examined in detail. Second, many agencies in several departments provide healthcare or healthcare-related services (this is especially true since early 2002), so outlays for government public health activities will appear in many agencies' budgets, not just the agencies that comprise the Public Health Service. Finally, there are difficult borderline issues (discussed in the "Lack of universally accepted definition of public healthcare" section) that make determining whether outlays for certain activities should be categorized in personal health, in government public health activity, or in some other (health-related or nonhealth) government function. Examples are the National Disaster Medical System

\*This shift would not alter the private/public funding ratio in HSS or in NHE because government public health activities are included in these aggregates.

operated by the Federal Emergency Medical Administration, security operations performed in conjunction with healthcare activities, and preparations for natural disasters or bioterrorism attack performed by many agencies under the “all hazards”<sup>15</sup> approach. In short, data on expenditures for federal government public health activity must be gleaned from administrative records and budgetary data that are not classified to readily identify the spending for public health services, either by purpose or by function.

### **Lack of data on state and local governments public health activity**

The third and most daunting challenge to estimating government public health activity is the lack of data on state and local government expenditures for public health activities. Arguably, this challenge represents an amalgamation of the first two challenges—with the fragmentation of responsibility for providing public health services inherent in United States’ system of multiple levels of government(s). States and local governments, each responsible to their electorates, must account for the receipts, expenditures, and operations of their public health departments. Yet, there are no nationwide standards of what constitutes public health services, or of how public health services are to be organized and delivered. For an economic accountant, this represents what might euphemistically be described as an “estimating challenge”; however, for policy analysts and decision makers, it represents a more serious problem. Experts in public health finance have noted the lack of available data on public health activity expenditures. The following quote succinctly describes the current state of affairs regarding the lack of data on state and local government public health activity:

Public health is typically difficult to evaluate due to a general dearth of available, accessible, accurate, and specific information about public health systems and performance, such as tracking the use of taxpayer dollars or measuring rates of many diseases in communities. Trust for America’s Health (TFAH) has recommended that this information should be considered essential for maintaining an accountable, responsive, and coordinated system designed to protect the health of communities.<sup>16(p7)</sup>

There have been many studies on state or local government’s public health expenditures since the Institute of Medicine’s 1988 publication of *The Future of Public Health*.<sup>17</sup> These studies, often undertaken by nonprofit groups such as the National Association of State Budget Officers, the National Association of County and City Health Officials, and the Public Health Foundation, provide valuable information. Yet, the studies are often point-in-time measurements, as opposed to time

series, and often focus on individual states or groups of states. No two studies used the same operational definitions. These efforts “represent important attempts to give conceptual and methodologic order to an embryonic field but have not, to date led to adoption of practitioner or scholarly consensus.”<sup>18</sup>

Currently, the only time series data available to estimate expenditures for state and local public health activity in the NHEA are the data on government finances and employment collected by the Governments Division of the United States Census Bureau. These data are compiled in the Census of Governments (COG) conducted every 5 years, and the annual Survey of Government Finances (SGF). There are definite advantages associated with the COG and the SGF data. The first advantage is in coverage. The COG is compiled from a universe of more than 87,000 local independent governments. More than 39,000 general-purpose governments at the state, county, municipal, and township levels are enumerated, along with more than 48,000 special-purpose governments. The governments enumerated in each census are available to the public in the Governments Integrated Directory. The SGF samples all state governments and 11,000 to 13,000 local governments, drawn from the COG universe.<sup>19</sup> It would be extremely difficult, if not impossible, for any private enterprise or government agency to produce and maintain to a list of governments comparable to the Governments Integrated Directory. The second advantage to COG data is the historical comparability of the data. The time series on state and local government employment and finances runs from 1957 through the most current year of the annual surveys, currently 2003–2004. The third advantage is consistency. The operational definition of what constitutes a government, whether a government is general-purpose or special-purpose, and the definition of the functions of government are consistent throughout the time series. This is significant advantage in analyzing changes in the level of activity over time.

Unfortunately, there are also some disadvantages in using the COG and SCF data to estimate state and local government public health activity. These disadvantages are primarily in the classification of government functions. The Governments Division of the Census Bureau uses the *Government Finance and Employment Classification Manual* (hereafter the *Manual*) to classify government employment and finances by function.<sup>20</sup> There are three basic problems with the current format of the *Manual* with regards to estimating government public health activities.

1. The functional groupings in the *Manual*—as shown on the Census Web site in Chart 4A *Detailed Categories for Reporting Functional Expenditures and Employment*,

by *Functional Grouping*—do not have an aggregate “medical” or “healthcare” functional grouping. The level of detail in the functional groupings is not sufficient to produce estimates of government medical care spending by function, by provider type, or by nature of service.

2. The two-digit function codes in the *Manual* do not seem to be compliant with the COFOG maintained by the United Nations Statistics Division. Three-digit COFOG details for Health would be needed (at the minimum) to produce estimates of government public health activity.
3. The definition of Function Code 32: Other Health in the *Manual* is not consistent with definitions in other coding systems. The *Manual* defines *Other Health* as follows: “Provision of services for the conservation and improvement of public health, other than hospital care, and financial support of other governments’ health programs.”<sup>21</sup>

The long list of examples of activities recognized as Other Health includes some functions that are not recognized as healthcare in other classification schemes, such as the SNA, the SHA, the COFOG, and the NHEA. Among the functions included in the *Manual* that are not universally recognized as healthcare are:

- other environmental health activities;
- rabies and animal control;
- abatement of mosquitoes, rodents, and other vermin;
- functions of the Environmental Protection Agency at the federal level;
- health-related inspection and regulation (eg, inspection of restaurants, water supplies, food handlers, nursing homes);
- regulation of air and water quality; and
- other environmental health activities.

Because of the *Manual’s* coding structure, the Bureau of Economic Analysis and the Centers for Medicare & Medicaid Services must rely on other sources—primarily the federal budget—to estimate government healthcare providers by function or service. Lack of consistent data at the state and local level is a particular problem because there are so few viable alternatives.

## ● Suggestions for Data Development

The NHEA estimates of expenditures for government public health activity could be improved considerably if more detailed and appropriate data were collected and compiled. The federal government, state and local governments, public health advocacy groups, umbrella groups representing state and local officials, and the

public health systems research community at large can each fill a role in this process. What follows are some *suggestions* on actions that could be taken to address the “general dearth of available, accessible, accurate, and specific information about public health systems and performance,” as noted by the Trust for America’s Health.

The first issue in data development is the establishment of some workable, universally accepted definitions on public health services. There needs to be a classification system with the capacity to define what public health services are and how they should be counted. The current plethora of definitions does not lend itself to a useful categorization of healthcare expenditures, nor is it adequate to separate personal healthcare services from population-based healthcare services. Governments at all levels, as well as advocacy groups and public health systems researchers should participate in this process. The difficulties caused by the lack of commonly accepted definitions and classification systems should not be underestimated.

At the federal government level, efforts should be undertaken for expanding the existing data collection instruments to track expenditures on government health activities. The advantage of this approach is that these instruments, such as the COG, are already in compliance with Office of Management and Budget guidelines on data collection. The list of governments that forms the universe for the COG and the sample frame for the SGF, the Governments Integrated Directory, already exists and is maintained each year so that the cost of creating and maintaining such a list need not be replicated. The cost of collecting more data on healthcare activities through these surveys would be considerably less than the cost of starting a new survey expressly for this purpose. The Governments Division of the Census Bureau, given adequate support, could modify and expand the Census of State and Local Governments and the SGF to capture more detailed information on public health services. This support could possibly come from other federal agencies with bona fide interests in data on healthcare activities. The *Manual* could be modified so that definitions of all government health activities (not just public health services) are reflective of some internationally recognized classification structure. Finally, the identification codes in Budget of the United States could be expanded to capture some measure of the functions of government so that healthcare activities were identified on a consistent basis.

State and local governments can play a role in data development by developing accounting systems that provide public health departments and boards of health with the capacity to track expenditures for public health activities and the revenue streams dedicated to providing public health services. It is important that these

accounting systems be workable and appropriate for the level of government actually doing the accounting. County, township, and municipal governments often do not have the financial resources to support sophisticated accounting systems. If the accounting tools developed to are not appropriate to these jurisdictions' ability to respond, data gathering efforts may come to naught. For example, imagine the bookkeeper (or whoever gets stuck filling out the questionnaire) in a small county or township office trying to ascertain how expenditures were allocated to the 10 EPHFs in the fiscal year just past. Imagine the questions; how many dollars did your township spend to "inform, educate, and empower people about health issues," and how many dollars were spent to "mobilize community partnerships to identify and solve health problems?" In order for the data gathered to accurately inform policy makers on the efficacy of these expenditures, the surveys must be carefully designed to ensure that the information has some validity in fact, not just an agency's budget divided by the number of healthcare functions on the questionnaire.

Advocacy groups that represent state and local government officials in public health or in government administration (National Association of County and City Health Officials, National Association of State Budget Officers), as well as the public health system research community at large can play significant roles in the data development process in several ways. First, by engaging with interested parties at all level of government, the issue of public health activity measurement can be kept on "the front burner." Hopefully, if enough government officials hear that more and better data are needed enough times, governments will respond. Second, the discourse on definitions and accounting issues will be significantly improved by the participation of these groups. The professional experience, the ability to represent many members, and the capacity for networking that the advocacy groups bring to the table will improve the results of any data-gathering activities. Finally, advocacy groups and the public health systems research community can encourage participation in any surveys undertaken.

## ● Conclusion

There are three principal challenges to measuring expenditures for government public health activity in the NHEA. The first is that there is no universally accepted definition of what kinds of activities constitute public health services or government public health activity. The second challenge is the difficulty reconciling the NHEA methodology with data available from the federal administrative record system and the reporting

system for federal budget. The third and most daunting challenge to estimating government public healthcare activity is the lack of data on state and local government expenditures for public health activities.

If there is a lesson to be learned from this exercise, that lesson is the importance of public health systems research. This growing field can provide a much needed bridge between public health practice and public health financing. Information garnered through public health systems research can inform policy and provide measures of the nation's public health systems' capacity and efficiency. It can be argued that the first step in the process of building a knowledge base that will facilitate this research is ascertaining how much we are spending on public health activities and determining what kind of healthcare is being purchased through these expenditures.

## REFERENCES

1. Biopreparedness [Editorial]. *Washington Post*. May 16, 2006:A16.
2. Smith C, Cowan C, Heffler S, Catlin A, and the National Health Accounts Team. Trends: national health spending in 2004: recent slowdown led by prescription drug spending. *Health Aff*. 2006;25(1):186–196.
3. US Department of Commerce. GDP: one of the great inventions of the 20th century. *Surv Curr Business*. 2000;85(1):6–9.
4. System of National Accounts (SNA93). Report prepared under the auspices of the Inter-Secretariat Working Group on National Accounts (the United Nations, the Commission of the European Communities, the International Monetary Fund, the Organization for Economic Cooperation and Development, and the World Bank), Brussels/Luxembourg, New York, Paris, Washington, DC; 1993.
5. Frist Bill, Public Health and National Security. The critical role of increased federal support. *Health Aff*. 2002;21(6):117–130.
6. Barry MA, Centra L, Pratt ETB Jr, Carol K, Giordano L. *Where Do the Dollars Go? Measuring Local Public Health Expenditures*. A report submitted by the National Association of County and City Health Officials, the National Association of Local Boards of Health, and the Public Health Foundation to the Office of Disease Prevention and Health Promotion, Office of Public Health and Science, US Department of Health and Human Services. March 1998.
7. Organization for Economic Cooperation and Development (OECD). *A System of Health Accounts*. Paris: OECD; 2000.
8. Essential Public Health Services Work Group of the Public Health Functions Steering Committee. Cited by: Eilbert KW, Barry M, Bialek R, Garufi M. *Measuring Expenditures for Essential Public Health Services*. A report submitted to the Office of Disease Prevention and Health Promotion, Office of Public Health and Science, US Department of Health and Human Services. Washington, DC: Public Health Foundation; 1996:4.
9. Eilbert KW, Barry M, Bialek R, Garufi M. *Measuring Expenditures for Essential Public Health Services*. A report submitted to the Office of Disease Prevention and Health Promotion, Office of Public Health and Science, US Department of Health

- and Human Services. Washington, DC: Public Health Foundation; 1996.
10. Public Health Foundation. *Measuring Expenditures for Personal Health Care Services Rendered by Public Health Departments*. A report submitted to the Health Resources and Services Administration, US Department of Health and Human Services. Washington, DC: Public Health Foundation; 1997.
  11. United Nations. Available at: <http://unstats.un.org/unsd/cr/family2.asp>. Accessed January 2006.
  12. Sensenig A, Donahoe G. Improved estimates of capital formation in the national health expenditure accounts. *Health Care Financ Rev*. 2006;28(1):9–24.
  13. Centers for Medicare & Medicaid Services. National Health Accounts: definitions, sources, and methods used in the NHE. 2004. Available at: <http://www.cms.hhs.gov/>. Accessed May 2006.
  14. Office of National Statistics (UK). *SHA Guidelines: Practical Guidance for Implementing a System of National Accounts in the EU* [working draft]. 2003;3:61–67.
  15. US Department of Homeland Security. Fact sheet: National Response Plan. DHS Press Office. Available at: [http://www.dhs.gov/interweb/assetlibrary/NRP\\_FactSheet\\_2005.pdf](http://www.dhs.gov/interweb/assetlibrary/NRP_FactSheet_2005.pdf). Accessed January 6, 2005.
  16. Trust for America's Health. Ready or not? *Protecting the Public's Health from Diseases, Disasters, and Bioterrorism*. Washington, DC: Trust for America's Health; 2005:7.
  17. Institute of Medicine. *The Future of Public Health*. Washington, DC: National Academies Press; 1998.
  18. Moulton AD, Halverson PK, Honoré PA, Berkowitz B. Public health finance: a conceptual framework. *J Public Health Manag Pract*. 2004;10(5):377–382.
  19. US Census Bureau. Available at: <http://www.census.gov/govs/www/apestechdoc.html#survey>. Accessed July 13, 2006.
  20. US. Census Bureau. Government finance and employment manual [chapter 4]. 2000. Available at: <http://www.census.gov/govs/www/class.ch4.html>.
  21. Heffler S, Sensenig A. Memorandum to Thomas Plewes, Senior Program Officer, Committee National Statistics (CNSTAT), National Academies of Science: *Re. CNSTAT Panel on Research and Development Priorities for the U.S. Census Bureau's State and Local Government Statistics Program*. June 12, 2006.