

Age Estimates in the National Health Expenditure Accounts: Definitions, Sources, and Methods

Introduction

Estimates of health spending by age, focus on the different expenditure, utilization, and financing mechanisms inherent to various age groups. These estimates are linked to the National Health Expenditure Accounts and use the same definitions for the types of service and sources of funds.¹ Thus, our age estimates are on an establishment basis, grouping services together according to place of service, rather than according to type of service. For example, hospital-based nursing homes are shown in our hospital category; only freestanding nursing homes are shown in the nursing home category.

Age estimates are shown for personal health care (PHC), rather than national health expenditures (NHE), because data is not available to break out the non-PHC categories by age group. PHC expenditures include spending for hospital care, physician and clinical services, dental care, other professional services, home health care, nursing home care, and health care products purchased in retail outlets (such as prescription drugs or over-the-counter medicines sold in pharmacies or eyeglasses sold in optical goods stores). Included in NHE but not PHC are estimates of spending for public health programs, administration, research, and construction and medical equipment.

We disaggregate PHC in the following seven age categories: 0-18, 19-44, 45-54, 55-64, 65-74, 75-84, and 85 and over. Analysis and data are also provided for three broader age groupings: children (age 0-18), working-age adults (age 19-64), and the elderly (age 65 and over). We produce estimates for selected years: 1987, 1996, 1999, 2002, and 2004.

Data Sources

Since no single source of comprehensive health spending by age exists, we used several sources and methods to develop these estimates. The table below lists the data sources that we used to create these estimates.

#	Data Source	Years Used	Reference
1	Medical Expenditure Panel Survey (MEPS)	1996-2004	http://meps.ahrq.gov/
2	National Medical Expenditure Survey (NMES)	1987	http://www.icpsr.umich.edu/cocoon/ICPSR/SERIES/00045.xml
3	Medicare Current Beneficiary Survey (MCBS)	1992-2004	http://www.cms.hhs.gov/mCBS/
4	National Hospital Discharge Survey (NHDS)	1987-2004	http://www.cdc.gov/nchs/about/major/hdasd/nhds.htm
5	National Hospital Ambulatory Medical Care Survey (NHAMCS)	1992-2004	http://www.cdc.gov/nchs/about/major/ahcd/ahcd1.htm
6	National Ambulatory Medical Care Survey (NAMCS)	1985, 1989-2004	http://www.cdc.gov/nchs/about/major/ahcd/ahcd1.htm
7	National Survey of Ambulatory Surgery (NSAS)	1994, 1996-2004	http://www.cdc.gov/nchs/products/elec_prods/subject/nsas.htm

¹ For a complete methodology of the historical national health expenditure accounts, <http://www.cms.hhs.gov/NationalHealthExpendData/>.

8	National Nursing Home Survey (NNHS)	1995, 1997, 2004	http://www.cdc.gov/nchs/about/major/nnhspd/nhdsdesc.htm
9	National Home and Hospice Care Survey (NHHS)	1994, 1996, 1998	http://www.cdc.gov/nchs/about/major/nhhcsd/nhhcsdes.htm
10	2000 Census Group Quarters Population	2000	http://www.census.gov/population/www/cen2000/grpqr.html
11	National Claims History Files (NCH)	1992, 1993, 1996, 1999- 2004	http://www.cms.hhs.gov/home/medicare.asp
12	Medicaid Analytic eXtract (MAX) data	1995-2004	http://www.cms.hhs.gov/MedicaidDataSourceGenInfo/07_MAXGeneralInformation.asp
13	Medicaid Statistical Information System (MSIS)	1995-2004	http://www.cms.hhs.gov/MedicaidDataSourceGenInfo/02_MSISData.asp

General Methods

For Medicare and Medicaid we use administrative data to develop health spending estimates by age. The Medicare estimates are based on data from the National Claims History Files, while the Medicaid estimates are based on data from the Medicaid Statistical Information system, with additional information from the Medicaid Analytic eXtract System. We develop all other age-based spending estimates using one of two general methods.

The first method derives spending by age by multiplying (i) cost per use data from household surveys, such as the Medical Expenditure Panel Survey (MEPS) times (ii) utilization counts by age from provider surveys, such as the National Ambulatory Medical Care Survey. The cost per use/visit values are generated by creating a matrix with sources of funds and age groups. The sources of funds data contain primary payer data, as well as all secondary payers under that primary payer. For example, if a MEPS respondent had a doctor visit that cost \$50, private health insurance may cover \$40 with the remainder out-of-pocket. Then, the private health insurance section of the matrix records \$40 with private health insurance as the primary payer and \$10 out-of-pocket as a secondary payer. With this information, an average payment per visit is calculated using the MEPS unit counts, which were recorded by primary payer. We use utilization data from provider surveys to account for the institutional population, which is missing from the household surveys. Though this method implicitly assumes that the cost per use/visit for an institutional individual is the same as for a non-institutionalized individual, it captures the higher utilization expected from the institutionalized population. Spending and utilization may be underreported in the household surveys because they predominantly rely on respondent recall to identify use, rather than provider records.

If no provider survey is available, the second method is used for a particular type of service. Here, we also use the MEPS utilization and make an adjustment to account for the institutionalized population. For these services (which include home health, other professional, dental, prescription drugs, other personal, non-durables, and durables), we calculate health spending by age using MEPS data for the non-institutionalized population. We then adjust the resulting estimates using relative cost factors of the

institutional and non-institutional population that were derived from Medicare Current Beneficiary Survey (MCBS) and MEPS data.

In some instances, source data and methodological constraints require us to average the resulting health spending estimates by age over several years to reflect more reasonable trends over time and within age groups. Where possible, we compared our estimates to other service specific health spending by age estimates to ensure reasonableness.

Medicare Current Beneficiary Survey (MCBS) data was used to supplement the MEPS data for the population age 65 and over. These data sets were particularly useful in the inpatient hospital and prescription drug components, where the higher sample sizes in MCBS enabled us to improve upon the reliability of the MEPS data. We use MEPS as a primary data source rather than MCBS because we need to have a consistent data source for all age groups, not just the elderly.

For both methods, the next step in this process is to scale aggregate spending levels to match the control totals in the national health expenditure accounts by type of service and source of funding. We label these levels “interim expenditures” since the levels for each age group did not sum up to national health account control totals by type of service and source of funding. In several instances, this step was more complicated than applying the distribution of age categories to a control total. For each type of service and source of funding (for example, hospital care paid for by private health insurance), we compared the sum of the interim expenditure levels of the seven age groups with the control total from the national health expenditure accounts. In most cases, the control total was within reason to the sum of the interim expenditure levels. If we determined that the difference was due to survey underreporting problems common to most household surveys, then we assumed that the difference could be applied according to the distribution of the interim expenditures. However, if the discrepancy was large and/or we determined that the difference was caused by something other than underreporting, we investigated the problem and usually adjusted the numbers up to the control totals by a method other than scaling. For example, if we determined that a portion of the difference was because data from the State Children’s Health Insurance Program was not picked up using our methods, then we would apply a greater share of the discrepancy to the age 0-18 category.

The last step of this process was to analyze the results, check for reasonableness, and compare them to other published results. For most types of service, we were able to compare our age distribution with the age distribution provided in the published MEPS results. Definitional differences, most specifically the exclusion of the institutionalized population in MEPS, accounted for most of the discrepancies in these series.²

² For a more complete description of these definitional differences, see Sing, M. et al.: “Reconciling Medical Expenditure Estimates from the MEPS and the NHE, 2002.” *Health Care Financing Review* 28(1):25-40, Fall 2006.