Aligning the Medical Expenditure Panel Survey to Aggregate U.S. Benchmarks

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ABSTRACT

Household-level data are valuable for a range of research efforts, including health policy microsimulation analyses, distributional studies, and analyses of condition-specific spending. Household data, however, do not provide a complete picture of health care expenditures, because they exclude certain types of outlays, such as administrative costs, government payments to providers that are not linked to patient events, research, and public health. Household data also do not provide information on employer premium contributions or tax subsidies. This paper describes how data from the Medical Expenditure Panel Survey (MEPS) were aligned with aggregate benchmarks from the National Health Expenditure Accounts (NHEA) and supplemented with tax expenditure estimates to produce a database that will help support a range of health research initiatives that require comprehensive measures of medical expenditures.

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Introduction

The Medical Expenditure Panel Survey (MEPS) is an annual household survey designed to yield nationally representative estimates of insurance coverage, medical expenditures, insurance premiums, and a wide range of other health-related and socioeconomic characteristics for persons in the civilian, noninstitutionalized population (Cohen et al., 1996, and Cohen, 1997). There are reasons, however, why no household expenditure survey can be expected to provide a complete picture of U.S. health care spending. First, household respondents cannot be expected to report administrative costs or payments to providers that are not linked to specific events. Second, household data can suffer from expenditure shortfalls due to under-reporting and differential attrition of high-cost cases. Third, household data must be augmented with tax simulations to measure the level and distribution of tax expenditures.

MEPS household data are a vital national resource for policy analysis and have already been used in a large number of microsimulation studies of existing or proposed programs. However, we believe the value of MEPS for certain applications can be enhanced through the detailed alignment of MEPS with aggregate expenditure benchmarks – primarily those provided by the National Health Expenditure Accounts (NHEA).[1] In this paper, we provide details regarding our methodology for producing an aligned MEPS dataset. This paper serves in part as a companion piece to "The Distribution of Public Spending for Health Care in the United States." The paper also serves as a background paper for other applications of these enhanced data.

[1] See, for instance, CMS (2006) *NHE Projections 2006-2016, Forecast Summary and Selected Tables* (at http://www.cms.hhs.gov/NationalHealthExpendData/).

Methods

The starting point for our analysis is pooled MEPS data from 2002 and 2003. We combine two years of data to smooth year-to-year fluctuations in expenditures due in part to random sampling variation (Machlin et al., 2003). The resulting dataset contains 70,099 positively-weighted observations. All health expenditures were inflation-adjusted to 2002 dollars using the gross domestic product deflator for medical goods. This section describes how we align this pooled dataset with aggregate benchmarks for 2002.[2]

NHEA Personal Health Care Benchmarks for MEPS

There are numerous differences between NHEA Personal Health Care (PHC) and MEPS expenditures including: differences in population, differences in the scope of services, and definitional differences regarding service types and payment sources. Sing et al. (2006) provide a detailed analysis of the two sources, comparing the pooled 2002-2003 MEPS to NHEA 2002.[3] National Health Expenditures in NHEA for 2002 totaled $1.603 trillion – approximately twice the MEPS total of $833 billion. A better comparison, however, is the NHEA estimate of $1.341 trillion for PHC, which excludes spending on administrative costs, public health, research, and construction, none of which are captured by MEPS. As explained in Sing et al. (2006), part of the difference between NHEA PHC and MEPS is because MEPS excludes persons in institutions and the active duty military and because MEPS by its design misses a number of other spending types that household respondents would be unlikely to report accurately. After adjusting NHEA amounts to correspond as nearly as possible with the scope of MEPS, Sing et al. (2006) found a 13.8 percent shortfall in MEPS. That analysis also found an uneven distribution of gaps between NHEA and MEPS, with very narrow gaps for Medicare-funded services contrasting

[2] The alignment is conducted for 2002 to build on the analysis in Sing et al. (2006), which focused on 2002 to take advantage of estimates from the quinquennial Economic Census.
[3] See also Selden et al. (2001).

with larger gaps for a number of service-payment combinations, such as Medicaid Hospital (facility) expenditures and Private Health Insurance Physician expenditures.

To align MEPS with NHEA, we made several modifications to the MEPS-consistent NHEA PHC benchmarks in Sing et al. (2006). First, we used the most recent update to the 2002 NHEA (Centers for Medicare and Medicaid Services, 2007). Second, we modified the NHEA allocation of capitated Medicaid payments across types of service using the MEPS expenditure distribution, rather than the fee-for-service Medicaid distribution used in the construction of NHEA.[4] This adjustment shifted expenditures from Medicaid Hospital to Medicaid Physician. It also had the reverse effect on private expenditures, because these are calculated as residuals in NHEA. The result is a somewhat more even pattern of MEPS-NHEA discrepancies than reported in Sing et al. (2006). Third, we modified source of payment distributions for a number of the NHEA subtractions listed in Table 4 of Sing et al. (2006) These modifications were motivated in part by insights from a recently completed analysis of MEPS participants matched to Medicare claims data (Zuvekas and Olin, 2008). The combined effect of these changes slightly widened the gap between the adjusted NHEA PHC and MEPS to 14.4 percent, with a differentially large widening of the gaps for Medicare. Here again, the adjustments yield more uniform differences between MEPS and NHEA across payment sources and services.

To obtain our final NHEA PHC benchmarks, we removed the NHEA adjustment described in Sing et al. (2006) pertaining to drug rebates for public insurance (so that the benchmarks, unlike MEPS, are net of such rebates). Finally, we employed MEPS data to increase the NHEA benchmarks to account for non-Medicare spending on ambulances. The resulting NHEA PHC benchmarks by payment source and service type are presented in Table 1.

[4] Obtaining accurate NHEA estimates by service type for capitated public insurance poses a significant methodological challenge, and CMS researchers are currently exploring alternative estimation strategies. Our adjustment should be viewed as an interim approach.

Aligning MEPS with MEPS-Consistent NHEA PHC Benchmarks

We aligned MEPS with the MEPS-consistent NHEA PHC benchmarks in three steps. First, MEPS, like all household surveys, has fewer persons with coverage from Medicaid and the State Children's Health Insurance Program (SCHIP) than are reported in administrative data. The gap is smaller if measured at a point in time than if one compares estimates of persons ever enrolled in the year. This may reflect the difficulty of unduplicating administrative estimates of annual enrollment to account for persons with multiple spells and persons moving between Medicaid and SCHIP or across state lines. Nevertheless, MEPS point in time enrollment falls short of administrative counts, which likely contributes to the 29.9 percent gap we observe for Medicaid between MEPS and the NHEA PHC benchmarks in Table 1. For this reason, the first step of our alignment was a 10 percent upweighting of Medicaid and SCHIP recipients, using a raking post-stratification to preserve the MEPS distribution of poverty level, age, sex, Medicare enrollment and uninsurance. One consequence of this adjustment is that it modestly reduces the share of the population with private insurance coverage – reflecting the growing evidence that household respondents have greater difficulty reporting their type of coverage than whether they are insured or uninsured.[5]

Second, we further modified the sampling weights to increase the prevalence of high-cost cases. Our motivation for doing so comes from unpublished AHRQ research showing attrition among such cases. Zuvekas, Cohen, and Pylypchuk (2005) and Zuvekas and Olin (2008) suggest the shortfall in high-cost cases might account for one-third to one-half of the MEPS-NHEA gap. For this reason, we believe it may be better to implement a partial non-response adjustment rather than simply scaling all MEPS amounts to align with NHEA PHC benchmarks. Our upweighting strategy targets the top three percent of the expenditure distribution in each of

[5] MEPS source of payment data help to reinforce this assumption. See also Call et al. (2008).

four (hierarchically defined) coverage groups: ever on Medicare, ever on non-Medicare Medicaid and SCHIP, ever on Private, and full-year uninsured. A raking post-stratification was implemented to preserve MEPS distributions by age, sex, race/ethnicity, and poverty level (along with coverage). The average increase in weight was 18.1 percent, closing 40 percent of the remaining gaps in out-of-pocket, private health insurance, Medicare, and Medicaid.[6] Raking was used to preserve MEPS distributions by age, sex, race/ethnicity, poverty level, region, and insurance coverage. The impact of the reweighting MEPS is shown in Table 2. The left-most column shows the MEPS source of payment totals from the public use files, and the second column shows the reweighted estimates.

Third, we scaled MEPS expenditure amounts to close any remaining gaps between the reweighted MEPS and the MEPS-consistent NHEA PHC benchmarks in Table 1. One area in which MEPS is particularly low is separately-billed laboratory tests, the number and financing of which are difficult to ascertain either from household respondents or from follow-back visits to providers ordering the tests. We allocated added spending on laboratory tests based on use of physician services. For most other type of service and source of payment differences, we simply scaled MEPS amounts to close the gap with the adjusted NHEA. The third column of Table 2 shows the effect of this adjustment, bringing MEPS into alignment with the MEPS-consistent NHEA PHC benchmarks in Table 1.

Augmenting MEPS with Additional NHEA PHC Spending

The MEPS-consistent NHEA PHC benchmarks in Table 1 exclude PHC expenditures believed to fall outside the definition of medical care in MEPS. Many, however, would be within the scope of applications we envision for the aligned data, and thus we have allocated

[6] We target these four payment sources because they align most directly between MEPS and NHEA and because the weighting adjustment was designed to preserve the coverage distribution.

them within MEPS.[7] These adjustments are detailed in Table 3 under the subheading of PHC Additions.

The single largest adjustment is for other personal care, including non-medical assistance with activities of daily living (such as housekeeping assistance), which were allocated in proportion to home health care by source of payment (most is paid by Medicaid). Another large group of adjustments are hospital subsidies not linked directly to patient care, such as Medicaid and Medicare disproportionate share payments and state and local funding for public hospitals. In each case, allocation to the person level was based on MEPS information regarding the receipt of uncompensated care (UC), which we calculate by comparing MEPS data on "full established charges" to actual payments. Medicare disproportional share (DSH) payments were allocated to low-income Medicare beneficiaries by UC. Medicaid DSH payments were allocated to poor non-Medicaid recipients by UC. Because MEPS UC estimates for these two groups roughly matched the DSH amounts, state and local funds for hospitals were allocated across all remaining cases by UC (regardless of income). Medicare hospital subsidies for graduate medical education were allocated to all patients in proportion to physician expenditures under the assumption that lower education costs lead to lower physician pricing.

The result of these PHC additions is shown in the fourth column of Table 2. Note, however, that non-patient specific Medicaid and Medicare subsidies to hospitals appear in the Other Federal and Other State and Local expenditure categories, so that the Medicare and Medicaid lines refer only to payments linked directly to patient care.

[7] For all NHEA-based additions to MEPS, care was taken to add in only those amounts attributable to the civilian, noninstitutionalized population.

Augmenting MEPS with Other Non-PHC Amounts from NHEA

For some applications, it is useful to expand MEPS to include NHEA estimates of expenditures on administration, public health, research and investment in capital and equipment. These amounts are detailed in Table 3, and their impact is shown in column five of Table 2.

For Medicaid, Medicare, Workers' Compensation, and other public programs, we allocated administrative costs in proportion to spending on care.[8] In the case of private insurance, we do not directly apply estimates of loading. Rather, column five of Table 2 presents the national sum of private premiums for the civilian, non-institutionalized population, inclusive of amounts paid by households and by employers on their behalf (including TRICARE). The MEPS household data contain information on premiums paid by households, but not employer premium contributions. We filled this gap with regression-based imputations from employer data in the MEPS Insurance Component (IC). Private premiums were benchmarked to the MEPS IC, not to the NHEA, in part because the NHEA premium estimates include persons in institutions and active-duty military.

Note, however, that Table 3 reveals a substantial gap between premiums paid and benefits received ($97.2 billion). Much of this difference can be explained by "loading," defined here as the difference between premiums and total benefits paid out. For instance, applying the average loading factor in NHEA to the Private Health Insurance total in column four of Table 2 explains $65.4 billion of this amount.[9] In addition, premiums paid by members of the noninstitutionalized population may in part fund the $31.9 billion in NHEA PHC Private Health

[8] A minor exception to this rule is that we allocated a portion of Medicaid administrative costs to new enrollees based on enrollment cost estimates from Fairbrother et al. (2004).
[9] The NHEA PHC total for Private Health Insurance in 2002 is $482.396 billion, versus $552.478 in premiums. Thus, [($552.478 - $482.396)/ $482.396] * $450.5 = $65.4 (billion).

Insurance expenditures that were made on behalf of persons in institutions.[10] Thus, although we cannot rule out errors in our alignment or the underlying data sources, we do not view this gap as necessarily being evidence of inconsistency.

Many of the remaining adjustments were broad-based in nature, such as research, spending on public health, and investments in plant and equipment. We allocated research spending to the full population in proportion to prescription drug expenditures. Investment in plant and equipment was allocated in proportion to hospital use. Public health dollars were allocated uniformly on a per capita basis.

Having allocated these non-PHC elements of NHEA to MEPS, the resulting expenditure total in column 5 of Table 2 is $1.2906 trillion. (Column 6 of Table 2 is discussed below.) By construction, the remaining $312.8 million difference between the benchmarked MEPS and the 2002 NHEA NHE total of $1.603 trillion is by or on behalf of persons outside the scope of MEPS (the institutionalized, activity duty military, and foreign visitors).

Tax Expenditures

The final step in our analysis is the simulation of a comprehensive array of tax expenditures. Marginal tax rates for our work were obtained by processing MEPS through the National Bureau of Economic Research's TAXSIM web-based simulation package (Feenberg and Coutts, 1993; National Bureau of Economic Research, 2007). Estimates by type of subsidy are provided in Table 4. For tax subsidies regarding employer-sponsored insurance (ESI), we assume that the incidence of employer contributions falls on workers who enroll in coverage.[11] Thus, the tax subsidy on employer contributions equals the amount of taxes that would have been

[10] This is the difference between the NHEA PHC Private Health Insurance total of $482.4 and the civilian non-institutionalized PHC Private Health Insurance total of $450.5 billion in the fourth column of Table 2.

[11] Our analysis ignores the possibility that employers adjust cash wages across workers to alter the true incidence of employer premium concentrations across workers. For an analysis of how this might affect incidence of the tax subsidy, see Selden and Bernard (2004).

paid if the worker instead received cash wages (holding total employer cost constant). Not surprisingly, the largest subsidy is the exclusion of premiums for ESI from federal income, Social Security and Medicare payroll, and state income taxation, which totaled $147.9 billion exclusive of subsidies for retiree coverage. This aligns well with estimates for more recent years if one takes into account rapid premium growth after 2002. For instance, Sheils and Haught (2004) estimate the federal income and federal Social Security and Medicare tax subsidies in 2004 to be $101.0 billion and $66.4 billion, respectively (2004 dollars). Selden and Gray (2006) estimate the total (federal income tax, state income tax, and payroll tax) ESI subsidy for current workers in 2006 to have been $209 billion (in 2006 dollars).

Perhaps somewhat surprisingly, the second largest component is the exemption of medical care from state and local sales taxes. The average sales tax rate across states and localities in 2002 was approximately 5.9 percent (Fox and Murray, 2005). We assume that sales taxes, if levied on private medical care expenditures, would be borne by households and private insurance companies in proportion to their payments (rather than by providers).[12] We also assume that absent the exemption, higher payments by insurers would translate into higher premiums (borne by households).[13]

In most cases, tax expenditures do not represent a net increase in national health spending. Instead, they shift the burden of a given expenditure across payers. The sales tax exemption for medical care, however, is an exception to this rule, because national health spending would have been larger had sales taxes been levied on medical care. The same argument can be made for a number of smaller tax subsidies, such as tax exemptions for non-

[12] Sales taxes, if levied on publicly funded care, would represent an intergovernmental transfer that we did not attempt to simulate.
[13] Note, however, that a portion of this increase would be borne by the public sector in the form of premium subsidies, and thus we reduced the sales tax subsidy accordingly.

profit hospitals and insurers. Had such subsidies not been granted, it is likely that provider revenues would have risen to offset at least partially the higher cost.[14] For simplicity, we count tax subsidies of this type as Other Federal and Other State and Local expenditures. Adding these amounts to Table 2 column five yields the fully benchmarked MEPS estimates in the last column of that table, with the benchmarked total being $1.3416 trillion.

Sources of Funds

Table 5 summarizes how we allocated each source of payment expenditure estimate from the adjusted MEPS to private and public sources of funds. The totals in the first row of this table repeat the source of payment totals for the fully adjusted MEPS expenditures from Table 2. The first two columns of Table 5 show how we re-allocated total estimated private out-of-pocket spending ($172.3 billion) and total estimated private health insurance premiums ($547.7 billion) to public sources to account for tax subsidies ($3.1 billion and $160.7 billion, respectively). For Medicare and Medicaid (columns 3 and 4), we shifted a portion of these public payments to private sources ($23.3 billion and $1.3 billion, respectively) to account for premiums paid by enrollees (in essence a "user's fee").[15] We did not, however, account for the intergovernmental transfer that occurs when federally and state funded Medicaid pays federally-funded Medicare Part B premiums. Table 5 also shows our estimate that public sector spending for health care of the civilian, noninstitutionalized population, inclusive of tax expenditures and net of premiums paid for public coverage, was $752.9 billion in 2002.

[14] Of course, this reflects a "statutory" approach to measuring tax subsidies, ignoring the potential for economic actors to respond to taxes and subsidies and thereby shift the incidence of taxes throughout the economy.
[15] Note, however, that MEPS undercounts premiums paid by Medicaid beneficiaries.

Discussion

Any effort to study health care benefit incidence or conduct microsimulation must necessarily rely on household-level data. Household data, however, by their design are unlikely to provide a complete picture of outlays on health care, and they miss tax expenditures entirely. For this reason, we believe that household data from MEPS aligned with aggregate benchmarks from NHEA and supplemented by tax expenditure estimates provide the nation's best resource for conducting an analysis of these types. Nevertheless, our undertaking confronts challenges regarding differences in the scope of populations studied, differences in definitions for types of services and sources of payments, the fact that MEPS expenditures fall short of comparably-defined benchmarks from the NHEA, and the need to simulate tax expenditures. Our hope is that our alignment methodology does not impart biases that would affect mean public spending comparisons across broad population subgroups. However, we readily concede that differential under-reporting in MEPS, for instance by income category, would adversely impact the reliability of our estimates.

We estimate that public spending on health care on behalf of the civilian, noninstitutionalized population totaled $752.9 billion (2002 dollars) or 56.1 percent of total spending from all sources. Public spending on health care is estimated to have been $2,612 per capita. Of total public spending, more than a quarter ($214.8 billion) took the form of tax preferences, primarily tax subsidies to private insurance and the exemption of most medical care spending from state and local sales taxes.

The data resource we have produced is a person-level file containing MEPS public use expenditures, as well as our adjusted and augmented amounts from each step of the analysis.

We hope that that this file becomes a valuable national resource to those interested both in the incidence of expenditures and the use of household data for public policy microsimulation.

References

Burman, Leonard F., and Roberton Williams (1994) "Tax Caps on Employment-Related Income," *National Tax Journal*, v. 47, n. 3, 529-46.

Call, Kathleen Thiede, Gestur Davidson, Michael Davern, and Rebecca Nyman (2008) "Medicaid Undercount and Bias to Estimates of Uninsurance: New Estimates and Existing Evidence," *Health Services Research*, v. 43, n. 3, 901-914.

Centers for Medicare and Medicaid Services (2002) *Program Information on Medicare, Medicaid, SCHIP, and Other Programs of the Centers for Medicare and Medicaid Services*. June 2002, at http://www.cms.gov/TheChartSeries/downloads/Sec3b_p.pdf (accessed on September 18, 2007).

Centers for Medicare and Medicaid Services (2007) *National Health Expenditures by Type of Service and Source of Funds: Calendar Years 2006-1960* http://www.cms.hhs.gov/NationalHealthExpendData/02_NationalHealthAccountsHistorical.asp#TopOfPage (accessed May 18, 2008).

Cohen, Joel W., Alan C. Monheit, Karen M. Beauregard, et al. (1996) "The Medical Expenditure Panel Survey: A National Health Information Resource," *Inquiry*, Winter, v.33, n. 4, 373-389.

Cohen, Steven B. (1997) *Sample Design of the 1996 Medical Expenditure Panel Survey Household Component*, MEPS Methodology Report No. 2, Pub. No. 97-0027 (Agency for Health Care Policy and Research: Rockville, MD).

Fairbrother, Gerry, Melinda J. Dutton, Deborah Bachrach, et al. (2004) "Costs Of Enrolling Children In Medicaid And SCHIP" *Health Affairs*, v. 23, n. 1, 237-243.

Feenberg, Daniel and Elisabeth Coutts (1993) "An Introduction to the TAXSIM Model," Journal of Policy Analysis and Management, v. 12, n. 1 (Winter) 189-194.

Fox, WF, and MN Murray (2005) "A National Retail Sales Tax: Consequences for the States," *State Tax Notes*, v. 37, 287-304.

Kaiser Commission on Medicaid and the Uninsured (2007) *Medicaid Facts*, at http://www.kff.org/medicaid/upload/7235-02.pdf (accessed on September 18, 2007).

Keehan, Sean P., Helen C. Lazenby, Mark A. Zezza, and Aaron C. Catlin (2004) "Age Estimates in the National Health Accounts" *Health Care Financing Review*, Web Exclusive, v. 1, n. 1, 1-16.

Machlin, Steven R., Marc W. Zodet, and J. Alice Nixon. (2003). "Estimates of Medical Expenditures from the Medical Expenditure Panel Survey: Gains in Precision from Combining

Consecutive Years of Data." Proceedings of the American Statistical Association, Section on Survey Research Methods. Alexandria, VA: American Statistical Association, 2003.

National Bureau of Economic Research (2007). TAXIM Related Files at the NBER. Available at http://www.nber.org/~taxsim/ (accessed on September 18, 2007).

Selden, Thomas M., and Didem M. Bernard (2004) "Tax Incidence and Net Benefits in the Market for Employment-Related Health Insurance: Sensitivity of Estimates to the Incidence of Employer Costs," *International Journal of Health Care Finance and Economics*, v. 4, n. 2, 167-92.

Selden, Thomas M., and Bradley M. Gray (2006) "Tax Subsidies for Employment-Related Health Insurance: Estimates for 2006" *Health Affairs*, v. 25, n. 6, 1568-1579.

Selden, Thomas M., Katharine R. Levit, Joel W. Cohen, et al. (2001) "Reconciling Medical Expenditure Estimates from the MEPS and NHA, 1996" *Health Care Financing Review*, v. 23, n. 1, 161-178.

Selden, Thomas M., and John F. Moeller (2000) "Estimates of the Tax Subsidy for Employment-Related Health Insurance," *National Tax Journal*, v. 53, n. 4, Part 1, 877-887.

Sheils, John, and Randall Haught (2004) "The Cost of Tax-Exempt Health Benefits in 2004," *Health Affairs*, Web Exclusive: W4-106 – W4-112

Sing, Merrile, Jessica S. Banthin, Thomas M. Selden, et al. (2006) "Reconciling Medical Expenditure Estimates from the MEPS and NHEA, 2002" *Health Care Financing Review*, v. 28, n. 1, 25-40.

Zuvekas, Samuel, Joel Cohen, and Yuriy Pylypchuk (2005) "Comparison of MEPS and MarketScan Health Care Expenditure Estimates." Internal memorandum, Agency for Healthcare Research and Quality (Rockville, MD).

Zuvekas, Samuel H., and Gary L. Olin (2008) "An Examination of the Accuracy of Medicare Expenditures in the Medical Expenditure Panel Survey" mimeo, Agency for Healthcare Research and Quality (Rockville, MD).

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Table 1: MEPS-Consistent Adjusted NHEA Personal Health Care Benchmarks, 2002

	Sources of Payment (billions of 2002 dollars)										
Service Type	**Out-of-Pocket**	**Private Health Insurance**	**Medicare**	**Medicaid & SCHIP**	**Tricare**	**Veterans' Admin.**	**Workers' Comp.**	**Other Federal**	**Other State & Local**	**Other Payment Sources**	**Total**
Hospital[a]	13.192	154.890	113.150	46.407	1.750	11.383	5.762	0.437	0.817	2.162	349.951
Physician[b]	23.553	128.663	53.159	19.217	3.841	1.097	9.451	1.056	0.983	2.643	243.663
Dental	31.783	34.719	0.071	4.196	0.000	0.013	0.000	0.117	0.209	1.562	72.670
Other Providers	14.031	30.037	11.711	4.886	0.000	0.093	4.959	0.212	0.192	1.282	67.404
Home Health	3.383	8.612	13.676	12.917	0.054	0.551	0.177	0.162	2.231	0.031	41.794
Prescriptions	37.881	77.586	2.238	34.290	1.842	1.820	2.088	0.178	0.373	0.029	158.325
Oth. Med. Equip.	18.128	3.167	8.294	0.000	0.000	0.000	0.329	0.017	0.084	0.254	30.273
Total	141.950	437.674	202.299	121.914	7.486	14.958	22.767	2.180	4.889	7.963	964.080

Source: Authors' calculations based largely on unpublished details of the NHEA-MEPS reconciliation in Sing et al. (2006). Service type definitions are consistent with those in MEPS, subject to the caveats noted. Payment source definitions are consistent with those of MEPS if Other Private is added to Private Health Insurance and if Other Public is added to Medicaid.

[a] Facility expenditures only (for all hospital-based services).

[b] Includes separately-billing physicians for hospital-based care.

Table 2: Benchmarking Pooled MEPS (Billions of 2002 Dollars)

	Pooled 2002-2003 MEPS[a]	Post-stratified to upweight Medicaid/ SCHIP enrollees and high-cost cases[b]	Aligned to MEPS-consistent NHEA Personal Health Care benchmarks	Augmented with additional NHEA Personal Health Care amounts[c]	Augmented with other NHEA (non-PHC) expenditures[d]	Adjusted to include tax subsidies outside the scope of NHEA[e]
Out-of-Pocket	161.6 (4.4)	163.7 (4.5)	142.0 (4.0)	172.3 (4.6)	172.3 (4.6)	172.3 (4.6)
Private Health Insurance[f]	358.0 (12.7)	372.8 (13.6)	445.2 (15.4)	450.5 (15.5)	547.7 (14.4)	547.7 (14.4)
Medicare	174.6 (7.4)	182.8 (7.9)	202.3 (8.5)	203.9 (8.5)	211.0 (8.9)	211.0 (8.9)
Medicaid/SCHIP	85.5 (4.1)	103.8 (5.7)	121.9 (6.7)	157.7 (7.6)	170.3 (8.1)	170.3 (8.1)
Veterans' Administration	20.2 (1.8)	21.8 (2.0)	15.0 (2.0)	16.4 (2.2)	16.4 (2.2)	16.4 (2.2)
Workers' Compensation	18.2 (6.6)	19.9 (7.6)	22.8 (4.0)	22.8 (4.0)	29.8 (5.3)	29.8 (5.3)
Other Federal	2.2 (0.3)	2.3 (0.4)	2.2 (0.4)	19.6 (1.2)	57.9 (1.8)	63.9 (1.9)
Other State and Local	4.9 (0.5)	5.5 (0.6)	4.9 (0.5)	21.0 (1.1)	77.2 (2.1)	122.2 (3.1)
Other Sources[g]	8.0 (0.6)	8.2 (0.7)	8.0 (0.7)	8.0 (0.7)	8.0 (0.7)	8.0 (0.7)
Total	833.2 (23.3)	880.7 (25.4)	964.1 (27.0)	1072.2 (29.3)	1290.6 (31.9)	1341.6 (33.0)
Sample size = 70,099						

Source: Authors' calculations using pooled 2002 and 2003 MEPS aligned with 2002 NHEA and other national benchmarks. Standard errors (in parentheses) are adjusted for the complex design of the MEPS sample, but do not reflect uncertainties regarding the adjustments to align MEPS with national benchmarks.

[a] MEPS 2003 data adjusted downward to 2002 dollars by GDP deflator for medical goods.

[b] Post-stratification upweighted persons with Medicaid and persons in the top 3 percent of the distribution of total expenditures by insurance coverage. Raking was used to preserve MEPS control totals by age, sex, race/ethnicity, poverty status, region, and insurance coverage.
[c] Includes only spending amounts for the civilian, noninstitutionalized population. NHEA Personal Health Care amounts excluded from the MEPS-consistent NHEA benchmarks include personal care, non-prescription nondurable goods, and payments to providers not linked to patient care (Sing et al., 2006). These adjustments are detailed in Table 3.
[d] Includes only spending amounts for the civilian, noninstitutionalized population. NHEA National Health Expenditure amounts added to MEPS include administrative costs, public health, research, and public spending on structures and equipment (Sing et al., 2006). These adjustments are detailed in Table 3.
[e] Includes the exemption of health care spending from state and local sales taxes and tax subsidies for non-profit health care establishments.
[f] Includes TRICARE.
[g] Includes automobile, homeowner's, and liability insurance, and other miscellaneous or unknown sources.

Table 3: Additions to MEPS after Calibrating to MEPS-Consistent NHEA Personal Health Care Benchmarks, 2002 ($ in billions)

Description	Allocation Method	Private	Public		Total
			Federal	State and Local	
NHEA Personal Health Care Additions					
Personal Care[a]					
Medicaid and SCHIP	In proportion to Home Health by payment source	0	20.8	15.0	35.8
Veterans' Administration	In proportion to Home Health by payment source	0	1.4	0	1.4
Other Federal, State, Local	In proportion to Home Health by payment source	0	4.6	3.9	8.5
Non-Prescription Nondurable Goods					
Medicare	In proportion to total prescription spending by payment source	0	1.6	0	1.6
Private Out-of-Pocket	In proportion to total prescription spending by payment source	29.2	0	0	29.2
Miscellaneous Clinics, including Family Planning					
Private Out-of-Pocket	In proportion to physician spending by private payment source	1.2	0	0	1.2
Private Health Insurance	In proportion to physician spending by private payment source	5.4	0	0	5.4

Description	Allocation Method	Private	Public		Total
			Federal	State and Local	
Hospital payments not directly linked to patients[b]					
Medicaid Disproportionate Share	In proportion to uncompensated care among poor non-Medicaid or Medicare enrollees	0	5.9	4.3	10.2
Medicare Disproportionate Share	In proportion to uncompensated care among Medicare recipients	0	0.6	0	0.6
Medicare retrospective adjustments and capital pass throughs	In proportion to Medicare hospital expenditures	0	2.8	0	2.8
Medicare Graduate Medical Education	In proportion to physician expense[c]	0	2.2	0	2.2
State and local subsidies to public hospitals	In proportion to uncompensated care (all income levels)	0	0	6.0	6.0
Miscellaneous other public NHEA PHC amounts	In proportion to total spending among low-income persons	0	1.3	1.9	3.2

Description	Allocation Method	Private	Public		Total
			Federal	State and Local	
Other NHEA National Health Expenditure Additions					
Administrative cost					
Private Insurance[d]	Implicit difference between premiums and expenditures paid by private insurance	97.2	0	0	97.2
Medicaid and SCHIP	In proportion to Medicaid expenditures[e]	0	7.2	5.3	12.6
Medicare	In proportion to Medicare expenditures	0	7.2	0	6.3
Other Public Programs[f]	In proportion to Other Public expenditures by program	0	0.1	7.2	7.3
Public Health	In proportion to total expenditures	0	8.0	44.2	52.2
Public Research	In proportion to total prescription drug expenditures	0	24.6	3.8	28.4
Public Investment in Structures and Equipment	In proportion to hospital expenditures	0	5.5	8.3	13.8

Source: Spending amounts excluded from NHEA in the Sing et al. (2006) reconciliation with MEPS, adjusted to exclude amounts attributable to persons in institutions.

[a] Includes non-medical assistance with activities of daily living.

[b] Hospital payments by Medicare and Medicaid that are not linked to patient events are reported in the Other Federal and Other State and Local categories in Tables 2 and 5, so that the Medicare and Medicaid/SCHIP estimates pertain solely to payments for patient care and the administration thereof.
[c] Medicare Graduate Medical Education subsidies are assumed to lower the prices physicians charge, by reducing the education expenses they must recoup.
[d] Includes TRICARE.
[e] A small proportion was allocated to cover the enrollment costs of new enrollees in Medicaid/SCHIP.
[f] Includes Veteran's Administration, Workers' Compensation, and other pubic programs.

Table 4: Simulated Federal, State, and Local Tax Expenditures, 2002 ($ in billions)

	Federal Income Tax Expenditures	Social Security/ Medicare Tax Expenditures	State & Local Tax Expenditures[a]	Total Tax Expenditures
Employer-Sponsored Insurance Exemption				
Current Workers	76.3	55.2	16.4	147.9
	(2.2)	(1.5)	(0.6)	(4.2)
Retirees	7.1	0	1.5	8.6
	(0.3)		(0.1)	(0.4)
Self-Employed Tax Deduction	1.5	0	0.6	2.5
	(0.1)		(0.05)	(0.2)
Medical Expense Deduction	2.3	0	0.4	2.7
	(0.2)		(0.04)	(0.2)
Sales Tax Exemption	0	0	37.9	38.0
			(1.0)	(1.1)
Other[b]	7.1	0.8	7.3	15.2
	(0.3)	(0.03)	(0.4)	(0.7)
Total	94.8	56.0	64.0	214.8
	(2.6)	(1.6)	(1.7)	(5.7)

Source: Authors' calculations using pooled 2002 and 2003 MEPS aligned with 2002 NHEA and other national benchmarks. Standard errors (in parentheses) are adjusted for the complex design of the MEPS sample, but do not reflect uncertainties regarding the adjustments to align MEPS with national benchmarks.

[a] Includes state income tax expenditures, state and local sales tax expenditures, and local property tax expenditures. Local income taxes are not modeled. Local tax expenditures are captured only through our use of average state and local sales tax rates and through a national estimate of non-profit hospital exemptions (primarily for property taxes).
[b] Included are tax subsidies for Flexible Savings Accounts, Medical Savings Accounts, charitable giving, non-profit hospitals, hospital bonds, and Blue Cross/Blue Shield.

Table 5: Allocating Adjusted Expenditures to Sources of Funds, 2002 ($ in billions)

	Out of Pocket Spending on Care	Private Health Insurance[a]	Medicare	Medicaid, & SCHIP	Other Public[b]	Other Sources[c]	Source of Funds Totals
Adjusted Expenditure Totals	172.3 (4.6)	547.7 (14.4)	211.0(8.9)	170.3(8.1)	232.3(8.1)	8.0(0.7)	1341.6 (33.0)
Private Sources							
Out-of-Pocket Spending on Care	169.2 (4.5)	0	0	0	0	0	169.2 (4.5)
Premiums	0	387.0 (10.1)	23.3 (0.8)	1.3 (0.2)	0	0	411.6 (10.6)
Private Sources Total	169.2 (4.5)	387.0 (10.1)	23.3 (0.8)	1.3 (0.2)[d]	0	0	580.8 (14.7)
Public Sources							
Tax Expenditures	3.1 (0.2)	160.7 (4.5)	0[e]	0[e]	51.0 (1.4)	0	214.8 (5.7)
Public Outlays	0	0[f]	187.7 (8.4)	169.0 (8.1)	181.3 (7.5)	0	538.0 (17.4)
Public Sources Total	3.1 (0.2)	160.7 (4.5)	187.7 (8.4)	169.0 (8.1)	232.3 (8.1)	0	752.9 (20.8)
Other Sources[c]	0	0	0	0	0	8.0 (0.7)	8.0 (0.7)

Source: Authors' calculations using pooled 2002 and 2003 MEPS aligned with 2002 NHEA and other national benchmarks. Standard errors (in parentheses) are adjusted for the complex design of the MEPS sample, but do not reflect uncertainties regarding the adjustments to align MEPS with national benchmarks.

[a] Private health insurance premiums (including TRICARE).

[b] Includes Veteran's Administration, Workers' Compensation, the NHEA categories of Other Federal and Other State and Local spending, as well as Medicare and Medicaid payments to hospitals and tax expenditures arising from the state and local sales tax exemption and tax subsidies for non-profit providers.
[c] Includes sources such as automobile, homeowner's, or liability insurance, and other miscellaneous or unknown sources.
[d] MEPS undercounts premiums paid for public coverage through Medicaid and SCHIP.
[e] In principle, out of pocket spending on Medicare (or Medicaid) premiums could be offset by tax expenditures through the medical expense deduction on federal (and many state) income taxes. Although we included premiums for public coverage in our tax simulation, all tax expenditures for medical expense deductions were attributed to private out-of-pocket spending on care and private spending on health insurance premiums.
[f] We were unable to account for the small amount of private health insurance premiums paid by non-tax-related public premium subsidy programs.