Health Care Use and Expenditure Data for Elderly Medicare Beneficiaries: A Comparison of Two Surveys

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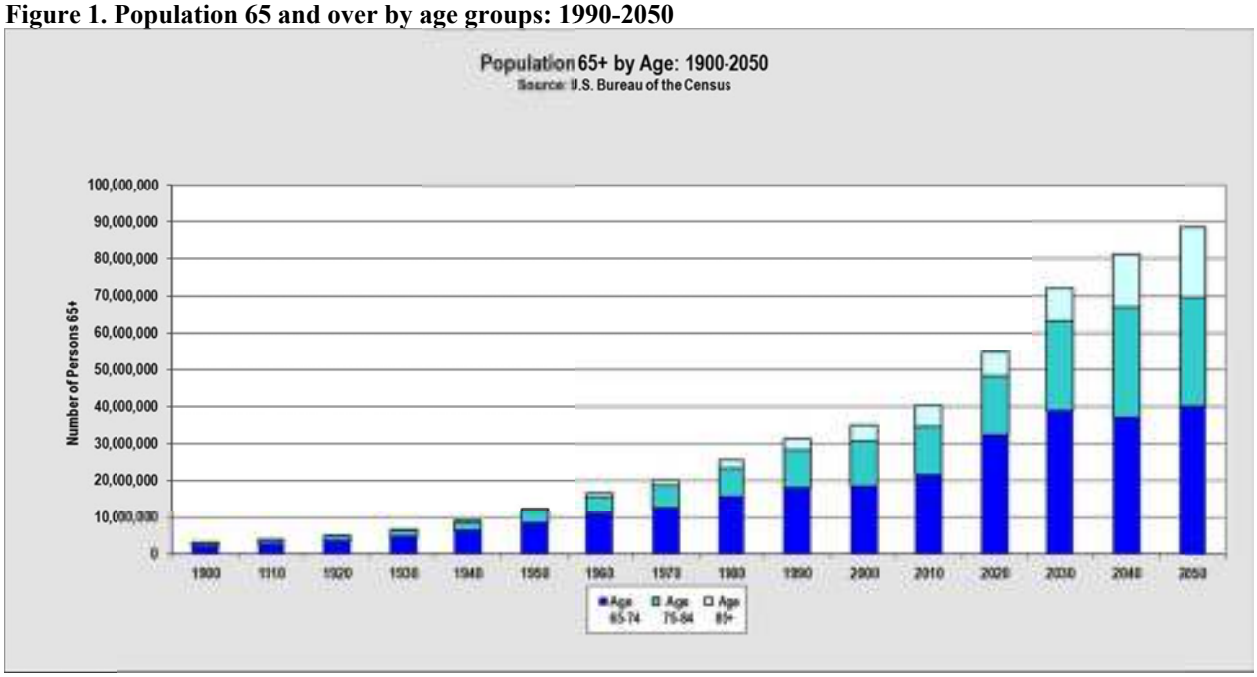
Introduction

The population aged 65 and over is predicted to more than double in 2050 compared to 2010. The U.S. Bureau of the Census estimated there were about 40 million people age 65 and over in 2010 and they estimate that total will be closer to 90 million in 2050, with a larger share of that age group represented by those individuals who are 85 and over (Figure 1).

Figure 1. Population 65 and over by age groups: 1990-2050



Understanding the health care needs for this growing population is critical for policy makers. Two nationally representative surveys, the Medicare Current Beneficiary Survey (MCBS) and the Medical Expenditure Panel Survey (MEPS), capture this age group and their health care needs, utilization and expenditures. Both surveys have been used to gain an understanding of the Medicare population, particularly for adults age 65 and over. One example where both surveys have been used is the inter-agency chart book of "Older Americans 2012: Key Indicators of Well Being." In the chart book, MCBS data were used to examine the percentage of Medicare beneficiary age 65 and over in selected residential settings by age group. Similarly, MEPS data were used to examine out-of-pocket health care expenditures as a percentage of income among people age 65 and over.

The goals of this paper are to: 1) compare and contrast the surveys' methodologies and types of estimates that can be made, and 2) compare use and expenditure estimates for select types of health care based on analytic subsamples that are as similar as possible (i.e., non-institutionalized Medicare beneficiaries age 65 and older enrolled in traditional fee-for-service plans). The explanations and results are intended to provide insights that will help analysts determine the most appropriate uses of data from either or both of these sources.

Background

The MCBS is a nationally representative survey of Medicare beneficiaries. The survey includes beneficiaries who are both aged and disabled. There are about 12,000 survey respondents a year, of which about 9,000 are ages 65 and over. For a more detailed description of the survey see Adler (1994). The MEPS is a nationally representative survey of households. There are about 14,000 households that respond each year. The data can be analyzed at either the household or person level. All ages are included in MEPS which is comprised of about 35,000 people each year, of which about 4,400 are ages 65 and over. For a more detailed description of the survey design see Ezzati-Rice et al. (2008).

The two surveys have many similarities. Both surveys:

1. are continuous multipurpose surveys,
2. rely on a stratified multi-stage probability sample design,
3. are longitudinal panel surveys with multiple rounds of data collection,
4. collect event specific utilization data (e.g. inpatient stays, dental visits, etc.),
5. collect expenditure and source of payment data for health care utilization,
6. incorporate claims or medical record data through linkage to survey reported data.
7. have annual files that are created based on overlapping panels, and
8. are used to monitor health care use and expenditure trends,

The design based linkage of the survey reported data to other sources is a common feature of both surveys. Both of the surveys collect utilization and expenditure data as part of the in-person interview. In MCBS, administrative Medicare claims data are integrated with the interview data for utilization and expenditures. In MEPS, the utilization estimates are anchored in the household reported events. However, the household expenditure data are supplemented with data collected from a sample of medical providers who provided care for the reported events.

There are also several differences between the two surveys. The main differences are with the sampling frame, the target population, and the survey respondents. In MCBS the frame is the Medicare enrollment data while the frame for MEPS is comprised of responding households to the previous year's National Health Interview Survey. The target population in MCBS is all Medicare beneficiaries (both aged and disabled). This includes both institutionalized and noninstitutionalized beneficiaries. In MEPS the target population includes all ages, but only the civilian noninstitutionalized population is eligible for the survey. In terms of respondents to the survey, in MCBS the survey participant typically responds for himself/herself when they are able. If they are not able a proxy is used. For the institutionalized participants all surveys are conducted by proxy. In MEPS there is typically one household respondent for all eligible members of the household.

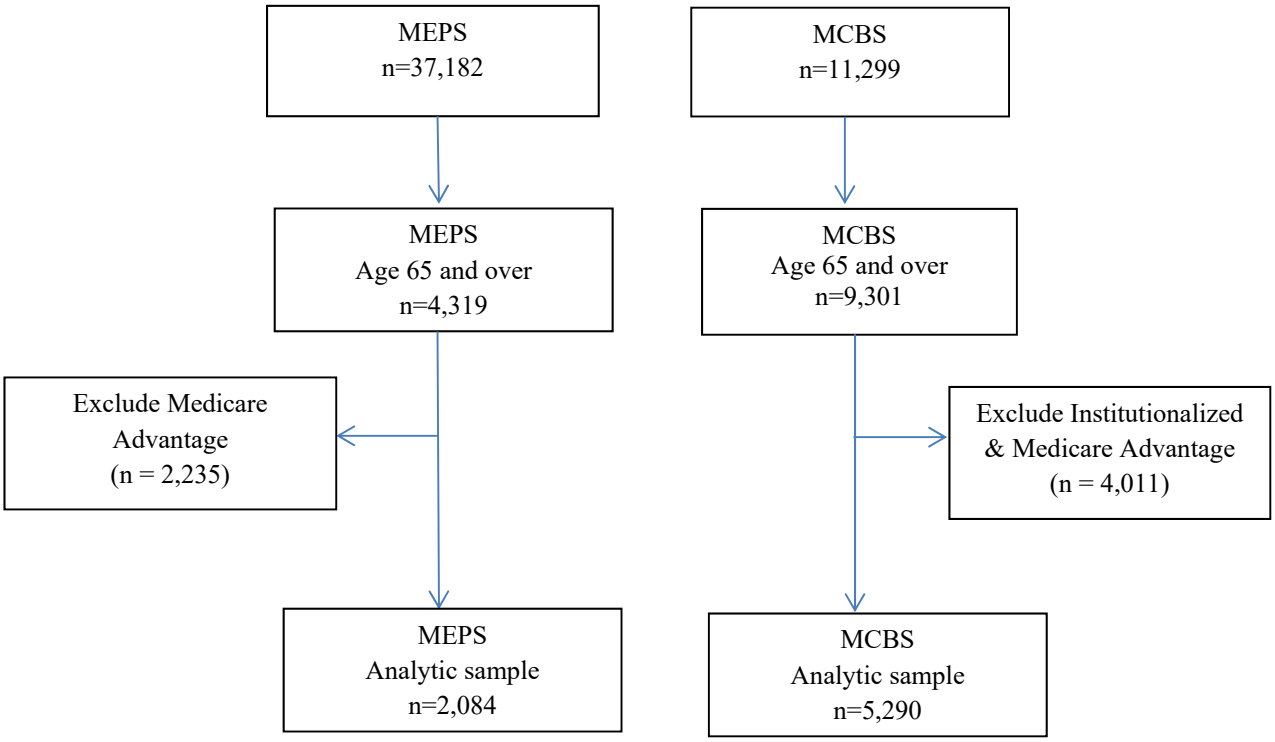
Two other notable differences relate to health insurance coverage and medical condition data. For details of health insurance coverage, Centers for Medicare & Medicaid Services administrative data augment survey reported data. In the research datasets a flag is used to identify if the variable is from survey report only, administrative records only, or both survey and administrative data. This differs from MEPS where health insurance coverage is based purely on self-report.

In terms of medical condition data, a unique feature of MEPS is that questions are asked to ascertain any medical conditions associated with reported health care events (i.e., reported prescription drug purchases, office-based medical visits, hospital inpatient stays, hospital outpatient visits, etc.). In contrast, health conditions are not asked for each specific health care event reported in MCBS.

Data and Methods

In our first set of analyses we created comparable analytic samples. To do this, we analyzed 2012 data for both surveys since that was the most recent year available for MCBS at the time of this paper. To compare the two surveys, we limited the study population to people age 65 and over who were noninstitutionalized and were enrolled in traditional Medicare fee-for-service (i.e., not Medicare Advantage) for the entire year (see Figure 2).

Figure 2. Sample sizes for analysis comparing survey estimates: MEPS and MCBS



Source: MEPS: 2012 Full Year Consolidated Data File; MCBS: 2012 Cost and Use Data Files

We chose three event types for comparisons: inpatient stays, prescription medications, and dental services. Inpatient hospital stays and prescription medicines were chosen because both surveys incorporate linked billing or administrative data to survey reported data for these event types. Dental services were chosen because both surveys rely solely on interview responses. In other words, neither of the surveys link to administrative or billing records to validate the reporting of dental visits.

For our second set of analyses, unique estimates from each survey are presented. Because MEPS is a household survey it is possible to produce family level estimates. This is not something that can be done with the MCBS data because the survey is not designed to collect data from multiple people in the same household (except in the uncommon instance when two beneficiaries from the same household are selected by chance). MEPS data are also presented by age group. The MEPS collects data from all age groups which allows for estimates to be compared across age categories. The MCBS collects data on beneficiaries less than 65 but that population is typically disabled and is not representative of all persons under 65.

Unique estimates from MCBS include data that are collected from the institutionalized population. MCBS estimates of sources of payment are presented comparing those living in the community to those in a long term care facility (i.e. institutionalized). A residence (or unit) is considered a long-term care facility if it is certified by Medicare or Medicaid; or has 3 or more beds, is licensed as a nursing home or other long-term care facility, and provides at least one personal care service; or provides 24-hour, 7-day-a-week supervision by a non-family, paid caregiver. However, skilled nursing facilities certified by Medicare or Medicaid are not defined as long term care facilities.

Estimates comparing functional limitations by type of community setting (traditional community and retirement community) are also presented using MCBS data. Persons residing in a retirement community include those who reported they lived in retirement community or apartment, senior citizen housing, continuing care retirement facilities, assisted living facilities, staged living communities, board and care facilities/homes, and similar situations, and who reported they had access to one or more of the following services through their place of residence: meal preparation; cleaning or housekeeping services; laundry services; help with medications. Function limitations were defined by Instrumental Activities of Daily Living (IADLs) and Activities of Daily Living (ADLs). IADLs are

activities related to independent living and are valuable for evaluating persons with early-stage disease, both to assess the level of disease and to determine the person's ability to care for him or herself. ADLs is a term used in healthcare to refer to people's daily self-care activities, feeding oneself, bathing, dressing, grooming, work, homemaking, and leisure. A comparison of estimates between traditional community settings and retirement communities cannot be done with the MEPS data because the survey does not identify persons living in retirement communities.

All statistical analyses were performed in SAS (version 9.3 SAS Institute Inc., Cary, N.C.), using the survey procedures. The analyses were weighted to account for the complex sample design and to adjust for nonresponse. Variances were estimated using Taylor series linearization in MEPS and balanced repeated replicate weights with the Fay adjustment in MCBS. Estimates are reported with their 95% confidence interval. All significance tests were evaluated using a two-sided p-value <0.05 as the level of statistical significance.

Results

For the first set of analyses comparing cost and utilization estimates with comparable analytic samples, the MCBS sample size was 5,290 and the MEPS sample size was 2,084 (Figure 2).

Table 1 shows the estimates for the three events examined for MEPS and MCBS. For inpatient hospital stays, the differences in utilization (17.3% versus 16.2%) and mean expenses per person ($21,269 versus $18,629) were not statistically significant. While there was a slight difference in reported dental visit utilization (44.5% in MEPS and 53.7% in MCBS), the mean dental expenses per person with a dental event were similar in the two surveys ($930 in MEPS and $1,014 in MCBS). For prescription drugs there were statistically significant differences in both utilization (88.7% in MEPS and 94.8% in MCBS) and mean expenses per person with a prescription drug fill ($2,382 in MEPS and $3,184 in MCBS).

Table1. Comparison of estimates: MEPS and MCBS

Event type	Percent with at least one event type	95% confidence interval for percent	Mean event type expense per person with at least one event type	95% confidence interval for mean
Inpatient hospital stay				
MEPS	17.3	(15.2-19.3)	$21,269	(18,036-24,503)
MCBS	16.2	(15.1-17.3)	$18,629	(16,612-20,646)
Dental visits				
MEPS	44.5	(41.2-47.8)	$930	(760-1,100)
MCBS	53.7	(52.1-55.4)	$1,014	(938-1,090)
Prescription drugs				
MEPS	88.7	(86.9-90.6)	$2,382	(2,140-2,624)
MCBS	94.8	(93.9-95.7)	$3,184	(3,025-3,342)

Source: MEPS: 2012 Full Year Consolidated Data File; MCBS: 2012 Cost and Use Data Files

Tables 2a and 2b present estimates that are only available in MEPS and not in MCBS. The average total expenditures per family was $9,214 (Table 2a). For families where at least one member is age 65 or over, the average total expenditures was about $14,051 and for those without any family members age 65 or over the average total expenditures was $7,617.

When looking at average total expenditures by age, we note that those age 65 and over have the highest mean total expenditures ($9,324) compared to younger age groups like ages 45-64, $6,043 (Table 2b).

Table2a. Estimate in MEPS not in MCBS: Average total expenditures per family by family composition

Family composition	n	Mean	95% Confidence Interval
Overall	14,763	$9,214	(8,697-9,731)
At least one family member age 65+	3,343	$14,051	(13,147-14,955)
No family member age 65+	11,420	$7,617	(7,046-8,187)

Source: MEPS: 2012 Full Year Consolidated Data File

Table2b. Estimate in MEPS not in MCBS: Average total expenditures by age

Age group (years)	n	Mean	95% Confidence Interval
Overall	37,182	$4,309	(4,079-4,539)
0-17	10,420	$1,812	(1,548-2,077)
18-44	13,506	$2,653	(2,405-2,900)
45-64	8,937	$6,043	(5,479-6,607)
65+	4,319	$9,324	(8,717-9,931)

Source: MEPS: 2012 Full Year Consolidated Data File

Tables 3a and 3b present estimates that are only available in MCBS because MEPS does not include institutionalized persons. Medicare pays the majority (59.1%) of overall health care services (which includes expenses for skilled nursing facilities and expenses for institutionalized persons) but does not pay any for long term care facility services (Table 3a). Medicaid and out-of-pocket are the largest sources of payment for long term care facility services (44.3% and 45.0%, respectively).

When looking at the percentage of Medicare beneficiaries with functional limitations we note that 55.4% of those living in the community do not have any limitations compared to 33.7% with no limitations living in a retirement community (Table 3b). About 17.5% of Medicare beneficiaries living in a retirement community have three of more ADLs compared to about 9.7% living in a traditional community.

Table3a. Estimate in MCBS not in MEPS: Sources of payment for health care services for Medicare beneficiaries age 65+, overall and by long term care facility

Source of payment	% Overall health care services (95% CI)	% Long term care facility* (95% CI)
Medicare	59.1 (57.6-60.6)	0
Medicaid	6.8 (5.9-7.7)	44.3 (39.9-48.7)
Out-of-pocket	17.7 (16.8-18.6)	45.0 (41.0-49.1)
Other	16.4 (15.1-17.7)	9.7 (7.3-12.1)

*Note: does not include skilled nursing facility (SNF)
Source: MCBS: 2012 Cost and Use Data Files

Table3b. Estimate in MCBS not in MEPS: Percentage of Medicare beneficiaries age 65+, with functional limitations by type of community residence

Functional Limitation	% Traditional Community (95% CI)	% Retirement Community (95% CI)
None	55.4 (54.3-56.4)	33.7 (28.2-39.2)
IADL only	12.3 (11.7-13.0)	13.7 (10.1-17.3)
1-2 ADL limitation	22.6 (21.6-23.5)	35.1 (30.2-40.0)
3 or more ADL limitations	9.7 (9.1-10.3)	17.5 (13.7-21.4)

Source: MCBS: 2012 Access to Care Data Files

Summary

The MCBS and MEPS are rich data sources for researchers and policymakers for analyses related to health care utilization and expenditures of the growing elderly population. In this paper, we showed that the two surveys produce estimates of health care utilization and expenditures that, for the most part, are fairly similar for comparable analytic samples. Differences in estimates for prescription medicines were most notable. These differences warrant further investigation and may be attributable to factors such as differences in the types of drugs reported, the degree

of outliers in the data and the imputation methodologies used. Another objective of the paper was to promote understanding of the similarities and differences in methodologies and type of information collected in these surveys. Depending on the analytic objective, one source may be more appropriate than the other. For example, MEPS is designed to enable estimation at the family level as well as for younger and non-disabled persons who are not Medicare beneficiaries. Conversely, data on sources of payment for Medicare beneficiaries residing in long term care facilities and characteristics of Medicare beneficiaries by type of community residence (e.g. retirement community) are available in MCBS but not MEPS.

References

Adler, GS. A Profile of the Medicare Current Beneficiary Survey. *Health Care Financing Review.* 1994*;* 15(4), 153-163.

Ezzati-Rice, TM, Rohde, F, Greenblatt, J, *Sample Design of the Medical Expenditure Panel Survey Household Component*, 1998–2007. Methodology Report No. 22. March 2008. Agency for Healthcare Research and Quality, Rockville, MD. http://www.meps.ahrq.gov/mepsweb/data_files/publications/mr22/mr22.pdf