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THE EARNINGS ANALYST

Official Journal of the
American Rehabilitation Economics Association

produced in collaboration with the
Collegium of Pecuniary Damages Experts

Articles

Practice Notes

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The Earnings Analyst (TEA) is a professional journal of AREA published in cooperation with CPDE. TEA focuses upon issues related to the proof of pecuniary damages in a litigation context and is dedicated to the publication of quality manuscripts dealing with substantive research and practice issues in all areas of expert pecuniary damages evaluation and testimony.

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CMS Health Care Price Projections and Issues for Economic Damages Experts

Joseph I. Rosenberg and Sean P. Keehan

Abstract

Economic damages experts regularly have the difficult task of forecasting health care price inflation, especially involving how much the cost of life care plans will grow over time in an unpredictable future. This paper examines the strengths and weaknesses of two commonly used methods of forecasting the price of medical goods and services: One is to use directly the 10-year price projections from the Office of the Actuary of the Centers for Medicare & Medicaid Services (CMS); the other is to forecast future price increases based on historical data for health care goods and services embedded within the Consumer Price Index (CPI) published by the Bureau of Labor Statistics (BLS). In this article, CMS and BLS health care price indexes are mapped to one another, definitional differences are examined, direct out-of-pocket spending is segregated from insurance-related spending, and the historical price growth rates for similar expenditure types are compared and analyzed.

Acronym Identification List

One reviewer suggested it would be helpful for readers to have an acronym identification list to refer to at the start of this article. That list follows on the next page...

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Acronym	Name
BLS	Bureau of Labor Statistics
CE Survey	Consumer Expenditure Survey
CHIP	Children's Health Insurance Program
CMS	Centers for Medicare and Medicaid Services
CPI	Consumer Price Index
CSR	Collateral Source Rule
GDP	Gross Domestic Product
Medicare SMI	Medicare Supplemental Medical Insurance
NAICS	North American Industry Classification System
NHE	National Health Expenditure
NHEA	National Health Expenditure Accounts
OOP spending	Out-of-Pocket spending
OTC drugs	Over-the-Counter drugs
PDNT	(Price of) Dental Services
PDRUG	(Price of) Prescription Drugs
PDUR	(Price of) Durable Medical Equipment
PHC	Personal Health Care
PHH	(Price of) Home Health Care
PHSP	(Price of) Hospital Care
PMSVC	(Price of) Medical Services
PNH	(Price of) Nursing Care Facilities and Continuing Care Retirement Communities
POPC	(Price of) Other Professional Services
POPER	(Price of) Other Health, Residential, and Personal Care:
POTC	(Price of) Other Non-Durable Medical Products (of which "over-the-counter drugs" is largest component)
PPHC	(Price of) Personal Health Care
PPHY	(Price of) Physician and Clinical Services
PPI	Producer Price Index

Section 1

Overview of CMS Health Care Price Projections

Economic damages experts regularly have the difficult task of forecasting health care price inflation, especially involving how much the cost of life care plans will grow over time in an unpredictable future. The first method is to use the 10-year price projections by type of service produced annually from the Office of the Actuary of the Centers for Medicare & Medicaid Services (CMS). The second method is to base future price increases on the historical price increases among a list of medical care indexes that are weighted within the Consumer Price Index, which is published monthly by the Bureau of Labor Statistics (BLS, monthly).

The Office of the Actuary at CMS annually publishes historical estimates (usually in December) and 10-year projections (recently in February) of the National Health Expenditure (NHE) Accounts. The goal of the annual historical accounts update is "measuring the total annual dollar amount of health care consumption in the U.S., as well as the dollar amount invested in medical care structures and equipment and non-commercial research." (CMS, Dec. 2018).

Although spending is the featured measure, substantial work goes into determining the factors accounting for the annual spending growth in national health expenditures. Therefore, the share of that spending accounted for by price growth, utilization per person growth, and population growth are estimated. These historical accounts are then extended ten years into the future when the NHE Projections are published annually by a different team in the Office of the Actuary at CMS.

The accounts are broken out into type of service (hospital, physician & clinical services, prescription drugs, etc.) and source of payment (private health insurance, Medicare, Medicaid, etc.), as shown in Table 1:

Table 1: National Health Expenditures: Types of Service and Payers

Types of Service
National Health Expenditures
Health Consumption Expenditures
Personal Health Care
Hospital Care
Professional Services
Physician and Clinical Services
Other Professional Services
Dental Services
Other Health, Residential, and Personal Care
Nursing Care Facilities and Continuing Care Retirement Communities and Home Health Care
Nursing Care Facilities and Continuing Care Retirement Communities
Home Health Care
Retail Outlet Sales of Medical Products
Retail Prescription Drugs
Durable Medical Equipment
Other Non-Durable Medical Products
Government Administration
Net Cost of Health Insurance
Government Public Health Activities
Investment
Structures
Equipment
Research

PAYER
National Health Expenditures
Out-of-Pocket
Health Insurance
Private Health Insurance
Medicare
Medicaid
Children's Health Insurance Program (CHIP)
Department of Defense
Department of Veterans Affairs
Other Third-Party Payers and Programs
Other Federal Programs
Other State and Local Programs
Other Private Expenditures

Source: CMS, February 20, 2019.

At the highest level, the dollar amount devoted to health care spending in 2017 was $3,492.1 billion. As a share of Gross Domestic Product (GDP), health care spending was 17.9% (Martin, et al, 2019). Of this total, **Personal Health Care**, shown in Table 1, accounted for about 85%.

When the most recent NHE Projections were published in March 2019 (Sisko, et al, 2019), there was also an update of the projection of growth rates for the price indexes for all 10 types of service in the PHC price index out to 2027. Since these price indexes are a key component to the featured spending projections, the price indexes are subject to several rounds of detailed internal review as well as more general round of external peer review. (The utilization projections and population projections were also subject to similar forms of peer review.) Although not part of the published material in Health Affairs or the CMS website, justifications for each price index were developed and defended during the peer review process.

The details of the source of the historical price indexes, how the projected price indexes are generated, and the components of the index (including the weight of each component) can be found in the NHE Projections Methodology paper (CMS, Feb. 2019). On page 6 of the Projections Methodology paper, price proxies for each of the 10 sectors that make up Personal Health Care (PHC) in the National Health Expenditure Accounts are listed along with the weight of each sector in the aggregate Personal Health Care Price Index, which is published annually.[1] For this large aggregated category of PHC, that information is presented in Table 2 on the next page.

Table 2: Components of PHC Expenditure Chain-Type Annual Weighted Price Index

Industry/Commodity or Service	Price proxy	2017 weight	NHE/CMS Acronym
PHC		100	PPHC
Hospital Care	PPI hospitals*	38.6	PHSP
Physician and Clinical Services	Composite Index: PPI for Office of Physicians and PPI for medical & diagnostic laboratories	23.4	PPHY
Other Professional Services	CPI services by other medical professionals	3.3	POPC
Dental Services	CPI dental services	4.4	PDNT
Home Health Care	PPI home health care services	3.3	PHH
Other Health, Residential, and Personal Care:		6.2	POPER
Other (School Health, Worksite Health Care, Other Federal, Other State & Local, etc.)	CPI physicians' services		
Home and Community-Based Waivers (HCBW)	CPI care of invalids & elderly at home		
Ambulance	CPI-U All Items		
Residential Mental Health & Substance Abuse Facilities	PPI residential mental retardation facilities		
Nursing Care Facilities and Continuing Care Retirement Communities	PPI nursing care facilities	5.6	PNH
Prescription Drugs	CPI prescription drugs	11.3	PDRUG
Other Non-Durable Medical Products	CPI internal & respiratory over-the-counter drugs	2.2	POTC
Durable Medical Equipment	Composite Index: CPI for eyeglasses and eye care and CPI nonprescription medical equipment and supplies	1.8	PDUR

*Producer Price Index for hospitals, U.S. Department of Labor, Bureau of Labor Statistics. Used beginning in 1994. Indexes for 1960-93 are based on a CMS-developed output or transaction price index.

The weights assigned to each PHC commodity or service and price proxy were simply determined by the percentage of spending in that sector relative to the aggregate of PHC for the most recent historical year. For example, the weight of the hospital care price index is calculated at 38.6 percent because in 2017, hospital care spending was $1,142.6 billion while personal health care spending was $2,961.0 billion (1,142.6 / 2,961.0 = 0.386).

It is often asked why the source of the price proxies differs from sector to sector within PHC. The reason is that an effort is made to come up with the proxy that best accounts for the average price charged for that good or service. For a service like dental care, the Consumer Price Index for dental services is a good proxy for how much the cost of that service is increasing over time. This is because dental services are typically not insured or not insured generously and the Consumer Price Index picks up the amount that the consumer pays for that service, also known as out-of-pocket spending. For dental services, out-of-pocket spending was $53.0 billion out of the total $129.1 billion spent on dental care in 2017 or 41.1 percent. Therefore, the change in what a consumer spends out-of-pocket is a good proxy for how much the total cost of a particular dental service is increasing. However, for hospital care, the share spent out-of-pocket is much less at just $33.9 billion out of the total $1,142.6 billion spent on hospital care services or 3.0 percent.

Therefore, the change in how much a consumer spends out-of-pocket for hospital services is not a good proxy for how much the price of a particular hospital service is increasing if most patients pay nothing or a very small percentage out-of-pocket for hospital bills. As a result, the Producer Price Index for hospitals was chosen as a proxy since this index is designed to show how much the wholesale cost of providing services increase each year.[2]

SECTION 2

HOW DOES BLS MEASURE HEALTH CARE PRICES IN COMPARISON WITH CMS?

The Bureau of Labor Statistics (BLS) measures medical care as one of eight major groups in the Consumer Price Index (CPI). It is divided into two main components: medical care services and medical care commodities, each with separate categories:

> **"Medical care services**, the larger component in terms of weight in the CPI, is organized into three categories: **professional services**, **hospital and related services**, and **health insurance**. **Medical care commodities**, the other major component, includes **medicinal drugs** and **medical equipment and supplies**." (BLS, Apr. 2019)

The CPI measures inflation generally by "tracking retail prices of a good or service of a constant quality and quantity over time", as observed changes in "out-of-pocket" household spending. The weights for each category within the CPI are determined using its "Consumer Expenditure Survey" (BLS, CE, monthly)

Table 3, on the next page, displays the definitions of the BLS' published medical care indexes and their relative importance within the consumer spending portion of GDP as of December 2018 (BLS, Apr. 2019).

Understanding further what is being measured by BLS is important. Medical care prices are unlike other non-medical components of the CPI, in which prices and weights are almost exclusively what consumers actually pay out-of-pocket, including for their own health insurance. However....

> "While the weight of each CPI medical care related index is determined by out-of-pocket spending, price change reflected by the indexes measure the total reimbursement to medical care providers. This includes medical care payments made by private insurance companies, Medicare Part B, and Medicare Part D on behalf of consumers.
>
> For example, in the **physicians' services** index, we consider the price of an office visit to be the patient's $20 copay, as well as the $80 insurance payment to the physician, for a total of $100. The $100 figure is used when calculating any price change." (BLS, Apr. 2019)

Table 3: Definitions of published medical care indexes and relative importance as of December 2018.

Item	Definition	Relative importance (percent)	% of Medical Care Index
Medical care	Medical care commodities and medical care services	8.682	100%
A. Medical care commodities	Prescription drugs, nonprescription over-the-counter-drugs, and other medical equipment and supplies	1.707	20%
1. Medicinal drugs	All prescription and over-the-counter drugs	1.65	19%
a. Prescription drugs	All drugs dispensed by prescription. Mail order outlets are included. Prices reported represent transaction prices between the pharmacy, patient, and third party payer, if applicable.	1.308	15%
b. Nonprescription drugs	All nonprescription drugs, including topicals	0.342	4%
2. Medical equipment and supplies	Nonprescription medicines and dressings used externally, contraceptives, and supportive and convalescent medical equipment (e.g., adhesive strips, heating pads, athletic supporters, and wheelchairs)	0.057	1%
B. Medical care services	Professional medical services, hospital services, nursing home services, adult day care, and health insurance	6.974	80%
1. Professional services	Physicians, dentists, eye care providers, and other medical professionals	3.255	37%
a. Physicians' services	Services by medical physicians in private practice, including osteopaths, which are billed by the physician. Includes house, office, clinic, and hospital visits. (Excludes independent lab work and ophthalmologists. See Eyeglasses and eye care.)	1.732	20%
b. Dental services	Services performed by dentists, oral or maxillofacial surgeons, orthodontists, periodontists, or other dental specialists in group or individual practice. Treatment may be provided in the office or hospital.	0.785	9%
c. Eyeglasses and eye care	Services and goods provided by opticians, optometrists, and ophthalmologists. Includes eye exams, dispensing of eyeglasses and contact lenses, office visits, and surgical procedures in the office or hospital.	0.319	4%
d. Services by other medical professionals	Services performed by other professionals such as psychologists, chiropractors, physical therapists, podiatrists, social workers, and nurse practitioners in or out of the office. Also, includes independent lab work and imagining services.	0.419	5%
2. Hospital and related services	Services provided to inpatients and outpatients. Includes emergency room visits, nursing home care and adult day care.	2.621	30%
a. Hospital services	Services provided to patients during visits to hospitals, ambulatory surgical centers, or other similar settings.	2.34	27%
i. Inpatient hospital services (1)	Services for inpatients. Includes a mixture of itemized services, Diagnosis Related Group -based services, per diems, packages, or other bundled services.	N/A	
ii. Outpatient hospital services (1)	Services provided to patients classified as outpatients in hospitals, free standing services facilities, ambulatory surgery, and urgent care centers.	N/A	
b. Nursing home and adult day care services	Charges for residential care at nursing homes, nursing home units of retirement homes, and convalescent or rest homes. Also includes non-residential adult day care.	0.193	2%
c. Care of invalids, elderly and convalescents in the home	Fees paid to individuals or agencies for the personal care of invalids, elderly or convalescents in the home including food preparation, bathing, light house cleaning, and other services	0.088	1%
3. Health Insurance	Indirect approach based on retained earnings method. See Health Insurance section.	1.099	13%

Footnotes:

(1) Substratum index: a special index published below the typical item level. Relative importance is not available for these indexes.

BLS recognizes the unavoidable discrepancy in assigning the weight of each CPI medical component by out-of-pocket spending but assigns the price change reflecting the total reimbursement to medical care providers. As explained in more detail in another BLS article, for physicians' services....

> "... the price sought is the one received by the physician for cases in which the consumer pays at least part of the service billed directly or indirectly via insurance premiums especially pricing physician services." (Reed, 2019)

The article goes on to explain the issue of "overrepresentation of self-pay quote" (prices charged to uninsured patients) relative to price quotes from private insurers and Medicare. BLS acknowledges that overrepresentation of the self-pay category occurs in part "... because physicians find these prices relatively easy to provide". The result of this is that the payer types in the CPI sample are dominated by private insurers which is quite different from the distribution in the current CPI sample. BLS attempts to correct this "overrepresentation of self-pay quote" prices by giving higher weights to the smaller sample from private insurers. The result is an intended offsetting of the sampling bias at the cost of introducing potential noise in the weighted prices.

Table 4, on the next page, presents a comparison of BLS data with CMS data at a high level. It separates out health insurance and other third-party spending from other out-of-pocket (OOP) spending compiled by each agency, as well as presents total consumer/personal health care spending relative to GDP.

According to the BLS Consumer Expenditure survey, in 2017 all consumer spending on health care was $640.626 billion (BLS, Table 1300, 2017). Backing out $443.860 billion for health insurance, this leaves $196.765 billion for non-insurance consumer spending on health care or about 1% of GDP (= $196.765 / $19,645.4). Including the BLS calculation of health Insurance, total health care spending in 2017 accounted for 3.29% of GDP (= $640.625 / $19,485.4). Thus, within total consumer health care spending, only 30.7% (= $196.765 / $640.625) was from non-health insurance spending, with the remaining 69.3% from health insurance.

As explained in an annual BLS study comparing estimates from its CE survey with the NHE accounts, the CE survey only includes medical spending by the civilian non-institutionalized population. By definition, this excludes nursing home care spending, although it does include a relatively small amount of nursing home spending as reported by households who do not live in nursing homes. such as for temporary convalescent care or as payment for nursing homes for others who don't live with them.[3] A much larger difference involves how much and what types of insurance reimbursement payments to providers are contained in each index. Based on its comparative study covering several years through 2016, of the total health insurance premiums paid by consumers in 2016, about 80% went to private insurers, with the rest to Medicare Supplemental Medicare Insurance (SMI) (Foster, 2018). In contrast, of the $2,347.3 billion of total health insurance payments, $1,039.8 billion or 44% went to private insurers, with the remainder divided between Medicare (28%), Medicaid (22%), and other health insurance programs such as the Children's Health Insurance Program (CHIP) and other programs of the Departments of Defense and of Veterans' Affairs (5%) (CMS, Table 5, 2019).

Table 4: Comparison of BLS and CMS Consumer/Personal Health Care Spending (2017 GDP = $19,485.4, all numbers in billions) (1)

	Total Non-Health Insurance or Third-Party Spending	Total Health Insurance Spending	Other Third Party Payers (2)	Total Consumer/ Personal Health Care Spending (3)
BLS	$196.77	$443.86	$0.00	$640.63
% GDP	1.01%	2.28%	0.00%	3.29%
% Total Consumer Health Care Spending	30.72%	69.28%	0.00%	100.00%
CMS	$365.50	$2,347.30	$248.30	$2,961.10
% GDP	1.88%	12.05%	1.27%	15.20%
% Total Personal Health Care Spending	12.34%	79.27%	8.39%	100.00%

(1) Sources: BLS: Consumer Expenditure (CE) Survey, Table 1300, and BLS Factsheet "Measuring Prince Change in the CPI: Medical Care", Last Modified April 24, 2019; CMS: Personal Health Care Expenditures; Aggregate and per Capita Amounts, Percent Distribution and Annual Percent, Table 5.

(2) Includes worksite health care, other private revenues, Indian Health Service, workers' compensation, general assistance, maternal and child health, vocational rehabilitation, other federal programs, Substance Abuse and Mental Health Services Administration, other state and local programs, and school health.

(3) BLS data are all considered out-of-pocket (OOP) spending, and include employee contributions toward private health insurance plus Medicare Parts B & D premiums. CMS data include all health insurance and third party payers. Note, BLS CE data exclude nursing home spending along with other institutionalized populations. Since nursing home spending accounts for 2% of the BLS Medical Care index, and all index items include payments by insurers to third party providers except for admin. costs and profits which are accounted for separately, it is unlikely that inclusion of nursing home spending would decrease the percentage attributable to health insurance spending.

Thus, while CMS personal health care spending is most heavily weighted toward health insurance and third-party payers, about 88%, BLS consumer health care spending also is heavily weighted toward insurers, about 69%, although not quite to the same degree as CMS and not to the same insurers.

As Table 4 shows, there remains a large disparity between the dollar amount of non-insurance or third-party spending by consumers, $196.8 billion according to BLS, and the amount of out-of-pocket spending on personal health care, $365.5 billion according to CMS. In theory, after adjusting for definitional differences, the non-insurance or third-party spending by BLS and CMS seem as though they should be of similar magnitudes. Besides the exclusion of nursing home spending per se by BLS, another possible source of difference could be the fact that BLS data are based on a survey, and that health care spending is concentrated, with the vast majority of what is spent being attributable to a small fraction of the population that have serious chronic conditions and/or get very sick or in a serious accident during that year. It is acknowledged that the CE survey like all surveys is subject to sampling error. Because of health care spending concentration in a small fraction of the population, and the sample used for the CPI estimate might happen to include a lower or higher percentage of the high spending portion than of the population as a whole, this could result in an underestimation or overestimation of actual spending. Additionally, individuals in the survey might forget or otherwise misestimate health care spending, creating another possible source of error.

Consistent with the spending categories in Table 4, non-insurance and non-third-party spending on health care is assumed to be the same as out-of-pocket (OOP) spending. In order to better understand the sources of difference observed in Table 4, Table 5 below is presented to disaggregate total OOP spending attributable by CMS to each PHC category, which collectively account for 12.3% of PHC. It also displays within each PHC category a bifurcation between OOP and Non-OOP spending. Before a more detailed comparison between BLS and CMS in terms of OOP spending can be made, a mapping for all healthcare categories between the two sources is provided in the next section.

Table 5: Out-of-Pocket Spending By Type of Service

		2017 ($ millions)	Share of OOP Spending	OOP as Share of Each Type of	Non-OOP Share of Each Type of	Unrounded
#	OOP Personal Health Care Expenditures	365,455	100.0%			
1	Hospital	33,923	9.3%	3.0%	97.0%	0.0928243
2	Physician	60,052	16.4%	8.6%	91.4%	0.1643208
3	Dental	53,003	14.5%	41.1%	58.9%	0.1450327
4	Other Professionals	23,869	6.5%	24.7%	75.3%	0.0653118
5	Home Health	8,993	2.5%	9.3%	90.7%	0.0246074
6	Prescription Drugs	46,716	12.8%	14.0%	86.0%	0.1278284
7	Other Non-Durables	62,096	17.0%	96.9%	3.1%	0.1699131
8	Durables	25,991	7.1%	47.8%	52.2%	0.0711185
9	Nursing Home	44,335	12.1%	26.7%	73.3%	0.1213132
10	Other Personal Health Care	6,479	1.8%	3.5%	96.5%	0.0177298
	Total Personal Health Care Expenditures	2,961,006				
	OOP as % of PHC	12.3%				

One note before leaving this section. Hereafter, to avoid unnecessary redundancy in terminology, unless quoting a direct reference such as to the BLS "Medical Care" indexes, the term "health care" will be used generically instead of "medical/health care".

SECTION 3

COMPARISON OF SPENDING WEIGHTS AMONG HEALTH CARE INDEXES, MAPPING CMS TO BLS

Using the BLS template for its Medical Care index categories, Table 6 on page 13 presents a mapping of those components of the CPI with the CMS/NHE price projection categories. While most of the health care categories mapped one-to-one, two CMS categories had split mapping to BLS, and two CMS categories had a combined mapping to a single BLS category:

- **POTC (Over-the-Counter drugs) mapped to "Nonprescription drugs":** The CMS category POTC mainly but not exclusively tracks Over-the-Counter drugs. However, it also includes non-durable medical equipment and supplies, e.g., surgical and medical instruments, surgical dressings, and diagnostic products such as needles and thermometers. Also, about 2/3 of the BLS Medical equipment and supplies is accounted for by non-durable equipment.[4] Since POTC maps to include 4.55% Nonprescription drugs and 2/3rds of the 1.1% Medical equipment and supplies, the fraction 0.857 (0.857 = [4.55% / (4.55%+1.14% x 2/3]) of the 2.16% subtotal for POTC within CMS PHC (from Table 2) is assigned to Nonprescription drugs. Hence 85.6% of the 2.16% total POTC = **1.85%**;

- **PDUR (Durables) mapped to "Eyeglasses and eyecare":** The CMS category PDUR is heavily weighted toward "Eyeglasses and eyecare". However, it also includes a portion of durable medical equipment and supplies, e.g., surgical and ophthalmic products, medical equipment rental, oxygen and hearing aids.[5] These essentially map to the residual 1/3rd of the BLS' "Medical equipment and supplies" that is considered durable. Therefore, PDUR predominantly but not totally maps to the 4.45% of BLS "Eyeglasses and eyecare," and 1/3rd of the 1.14% for durable "Medical equipment and supplies": hence the fraction 0.923 (0.923 = [4.55% / (4.55% + 1.14% x 1/3]) of the 1.84% subtotal for all of PDUR within CMS PHC (from Table 2) is assigned to the BLS' "Eyeglasses and eyecare". Hence 92.3% of the 1.84% total PDUR = **1.70%**;

- **POTC and PDUR mapped to Medical equipment and Supplies:** The remaining portions of POTC and PDUR are mapped to the 2/3rds of the BLS' "Medical equipment and supplies": 2.16% for all POTC - 1.85% mapped to BLS non-prescription drugs = 0.31% for POTC mapped to the BLS' "Medical equipment and supplies". Therefore, 1.84% (PDUR total as % of PHC) - 1.70% (PDUR allocated to "Eyeglasses and eyecare", above) = 0.14% for PDUR allocated to 2/3rds of the 1.14% of BLS' "Medical equipment and supplies" . Combined the two

CMS subtotals, 0.31% from POTC and 0.14% from PDUR, rounds to 0.45% of PHC within CMS mapped to the BLS category "Medical equipment and supplies";

- **PNH (Nursing home)and POPER (Other personal health care) both are mapped to "Nursing home and adult day care services.** Since PNH and POPER represent 5.62% and 6.18% of the overall CMS PHC spending, their combined weight of 11.80% is mapped to the 2.27% weight assigned to this comparable BLS index. The reason for this large disparity in weights is that BLS considers populations in nursing homes as part of the institutionalized population that is excluded from its CPI data. This difference is discussed further in the next section.

Table 6: Mapping of BLS Medical Care Components of CPI to CMS/NHE Price Projection Categories

Item	Percentage of the Medical Care Index	Percentage Excl Health Ins.	Comparable CMS Category Name	CMS Label (color-coded for split)	Percent-age	Delta %
Medical care	100%					
A. Medical care commodities	20%					
1. Medicinal drugs	19%					
a. Prescription drugs	15%	17.05%	Presc Drugs	PDRUG	11.26%	-5.8%
b. Nonprescription drugs	4%	4.55%	Over the Cntr	POTC	1.85%	-2.7%
2. Medical equipment and supplies	1%	1.14%	Durables & Non-Durables	PDUR, POTC	0.45%	-0.7%
B. Medical care services	80%					
1. Professional services	37%					
a. Physicians' services	20%	22.73%	Physician	PPHY	23.45%	0.7%
b. Dental services	9%	10.23%	Dental Services	PDNT	4.36%	-5.9%
c. Eyeglasses and eye care	4%	4.55%	Durables	PDUR	1.70%	
d. Services by other medical professionals	5%	5.68%	Other Professional Services	POPC	3.26%	-2.4%
2. Hospital and related services	30%					
a. Hospital services	27%	30.68%	Hospital Care	PHSP	38.59%	7.9%
b. Nursing home and adult day care services	2%	2.27%	Nursing Home & Other Personal Health Care Svc	PNH: 5.6% POPER: 6.2%	11.80%	9.5%
c. Care of invalids, elderly and convalescents in the home	1%	1.14%	Home Health	PHH	3.28%	2.1%
3. Health Insurance	13%					
Sum	100%	100.00%			100.00%	

SECTION 4

COMPARISON OF OUT OF POCKET SPENDING BETWEEN BLS AND CMS

Using the OOP spending subtotals shown in Table 5, the mapping between health care categories shown in Table 6 and data from the BLS CE survey, Research Table R-1,[6] it is possible to back out the non-administrative and non-retained earnings portions of insurance spending that are included by in the BLS indexes shown above in Table 6. This separation of all insurance and third-party spending implies that the remaining estimated spending from the BLS CE survey is direct OOP spending by consumers, and thus allows a mapping of OOP spending by category between BLS and CMS. This is shown in Table 7 on the next page.

Since BLS excludes spending by institutional populations, such as those living in nursing homes, only a very small amount of consumer spending is included in this category from its CE survey, reported in BLS Research Table R-1 as "Care in convalescent or nursing home". A similar CE category from Table R-1 is "Medical care in retirement community". Judgment was applied to map these and other BLS spending categories from its Table R-1 first to BLS Medical Care indexes and then to map these OOP spending values to those of the CMS indexes, shown previously in Table 5. Allowing for some imprecision in mapping, this one combined category, including nursing home, adult day care and care for invalids, elderly, and convalescents in the home is the is the largest single category of OOP spending difference between the two sources, shown in Table 7. In 2017, in this one category grouping, there was an estimated $.5 billion (rounded from $468 million) OOP spending according to BLS versus $59.8 billion according to CMS. The most conservative way to make this particular comparison would be to limit CMS OOP spending purely for nursing homes (PHH), which account for $44.3 billion out of the $59.8 billion for the three CMS categories grouped in Table 7, highlighting the exclusion of nursing home spending as one of the main definitional differences between BLS and CMS.[7] Other large dollar differences include $33.9 billion for "Physician Services" and $31.2 billion for "Nonprescription drugs".

Table 7: Mapping of Estimated OOP Spending in BLS and CMS ($ millions)

Item	BLS Estimated OOP Spending	CMS Label (color-coded for split)	CMS Estimated OOP Spending	Estimated Delta OOP Spending	OOP % Excess CMS over BLS
Medical care					
A. Medical care commodities					
1. Medicinal drugs					
a. Prescription drugs	37,137	PDRUG	46,716	9,578	25.8%
b. Nonprescription drugs	25,959	POTC	57,190	31,231	120.3%
2. Medical equipment and supplies	11,193	PDUR, POTC	16,861	5,668	50.6%
B. Medical care services					
1. Professional services					
a. Physicians' services	26,195	PPHY	60,052	33,857	129.2%
b. Dental services	38,054	PDNT	53,003	14,949	39.3%
c. Eyeglasses and eye care	16,597	PDUR	14,035	(2,562)	-15.4%
d. Services by other medical professionals	20,717	POPC	23,869	3,152	15.2%
2. Hospital and related services					
a. Hospital services	20,452	PHSP	33,923	13,471	65.9%
b. Nursing home and adult day care services	468	PNH: 5.6% POPER: 6.2%	59,807	59,339	12679%
c. Care of invalids, elderly and convalescents in the home		PHH			
Out-of-Pocket Estimated	196,773		365,455	168,682	85.7%

SECTION 5

COMPARATIVE GROWTH RATES OF CMS AND BLS INDEXES

Table 8, on page 17, presents a comparison of compound annual growth rates for the matched pairs of indexes. The purpose of this comparison is to enable damages experts who forecast health care inflation to understand how and why the historical price growth rates for individual health care categories diverge between the two sources. Based on the earliest period of historical data that were available for each paired BLS-CMS index, compound annual growth rates were calculated through 2018, although 2018 was technically still a forecast year.[8]

It is clear and logical that for indexes that map one-to-one and that both use CPI as the price proxy, the compound annual growth rates are usually quite similar (e.g., Dental Services, Other Professional Services, and Prescription Drugs, although the latter involves an important caveat, discussed further, below). For the two indexes that do not map one-to-one but still both use CPI as price proxy, the compound annual growth rates are closer

when the CMS indexes are mapped only to the one BLS index that it most closely matches (e.g., Durable Medical Equipment from CMS with Eyeglasses and Eye Care from BLS; OTC Drugs/Other Non-Durable Medical Products from CMS with Non-Prescription Drugs from BLS). For the other indexes that use different price proxies, PPI for CMS and CPI for BLS, the compound annual growth rates are most dissimilar (i.e., Home Health Care, Hospital Care, Nursing Home and Other Personal Health Care, Physician & Clinical Services, and Medical Services, the latter of which is a composite category[9]).

Two of the more interesting comparisons involve straight mappings of BLS to CMS categories: Prescription drugs and Physicians services. Figure 1, on page 18, displays the growth of $1 beginning in 1970 with both sets of paired indexes.

Starting from 1970, the Physician indexes began similarly but became widely divergent beginning around the late 1980s, whereas the Prescription drug indexes, also starting from 1970, were largely in sync until around 2014. The two Physician indexes have been compiled based on different price proxies over time: the CMS index is based on the Producer Price Index (PPI), whereas the BLS index is based on the Consumer Price Index (CPI). The compound annual growth rates were thus 5.13% for the BLS index versus 3.81% for the CMS index. By contrast, the two Prescription drug indexes have mostly tracked with the same price series over time: both indexes have been based on the CPI. The compound annual growth rates were thus 5.15% for the BLS index vs. 5.00% for the CMS index. Although the compound growth rates for the two Prescription Drug indexes were relatively close for the most of the almost 50-year period from 1970-2018, a strong divergence between them has been observed since 2014.

Explaining these two sets of paired observations, we begin with the one for Prescription Drugs, both ostensibly using the CPI price proxy. According to the 2019 Medicare Trustees Report, prescription drug rebate as a share of Medicare Part D total drug costs increased steadily from 11.7 percent in 2012 to 21.8 percent in 2017 (Medicare Trustees, 2019, p. 140). Because rebates also increased similarly for prescription drugs purchased under private health insurance and Medicaid, the CPI for prescription drugs became overstated because it was picking up the invoice (or pre-rebate) price of the drug. However, the net spending by insurers and Medicare and Medicaid is after rebate and thus has been much less. CMS acknowledges that it probably should have started adjusting the Prescription Drugs component of the CPI for rebates earlier because for drugs that treat conditions like diabetes and hepatitis-C, the rebates eventually returned to the third-party payer accounts for more than half of the invoice price. The CPI published by the BLS may not reflect the actual prices paid by consumers in some cases. However, this would affect the BLS measure of price change only when the rebates were first implemented, or if they became more or less prevalent.

Regarding the wide divergence for Physicians & Clinical Services, the difference is essentially all due to who is paying. To the extent that the CPI for physicians is more heavily weighted by third-party payers on behalf of consumers, and not as much weighted by Medicare and Medicaid, this could account for much of the difference. The CMS position is that the CPI is less relevant for determining the true price changes for the physician services that occur in the U.S. each year.

Table 8: Comparative Health Care Price Growth Rates for NHE/CMS Data Sets Mapped to Closest BLS Categories

NHE/CMS Label	Dental Services		Prescription Drugs		Durable Medical Equipment (1)		Home Health Care		Hospital Care		Nursing Home + Other Personal Heath Care (2)		Other Professional Services		OTC Drugs/Other Non-Durable Medical Prod.(3)		Physician & Clinical Services		Medical Services (Both Composites)	
Index Source	BLS	CMS	BLS	CMS	BLS	CMS	BLS	CMS	BLS	CMS	BLS	CMS	BLS	CMS	BLS	CMS	BLS	CMS	BLS	CMS
CMS Code		PDNT		PDRUG		PDUR		PHH		PHSP		PNH & POPER		POPC		POTC		PPHY		PMSVC
Price Proxy	CPI	CPI	CPI	CPI	CPI	CPI	CPI	PPI	CPI	PPI	CPI	CPI & PPI	CPI	CPI	CPI	CPI	CPI	PPI	CPI	CPI & PPI
History Available	1947	1970	1947	1970	2009	1970	2005	1970	1996	1970	1996	1970	1986	1970	2009	1970	1947	1970	1935	1970
Growth Calc From	1970	1970	1970	1970	2009	2009	2005	2005	1996	1996	1996	1996	1986	1986	2009	2009	1970	1970	1970	1970
Growth thru 2018	5.38%	5.38%	5.15%	5.00%	0.80%	0.46%	1.47%	1.09%	5.61%	2.63%	3.81%	2.75%	2.74%	2.87%	-0.29%	-0.35%	5.13%	3.81%	5.95%	4.62%
Correlation Coef.	100.00%		99.86%		72.73%		97.03%		98.35%		99.73%		99.99%		99.67%		97.43%		98.59%	
Index Source					BLS	CMS									BLS	CMS				
CMS Code					Eyeglass	PDUR									Non-PreDr	POTC				
Growth Calc From					1986	1986									2009	2009				
Growth thru 2018					2.02%	1.80%									-0.35%	-0.35%				
Correlation Coef.					98.98%										100.00%					

(1) The NHE/CMS category "Durable Medical Equipment" is correlated with the BLS categories "Eyeglasses and Eyecare" and a portion of "Medical Equipment and Supplies". Top panel includes weighted average for both BLS categories but is only available since 2009. Lower panel shows longer time series for just eyeglasses and eye care, which began in 1986 (and accounted for about 92% of the total in 2017).

(2) Two NHE categories when combined are most comparable with BLS category of "Nursing Home and Adult Day Care Services". These are "Nursing Care Facilities and Continuing Care Retirement Communities" ("Nursing Home" or PNH in CMS date series) and "Other Health, Residential, and Personal Care" ("Other Personal Health Care" or POPER in CMS data series). These two NHE/CMS data series are weight-averaged to compare with the BLS category.

(3) The CMS category POTC is more highly aggregated than the comparable BLS categories. Although "over the counter" or nonprescription drugs is the largest category within POTC (% unknown at present) this category is labeled more generically within the published NEH as "Other Non-Durable Medical Products". The BLS "Nonprescription Drugs" is its own category but to be comparable with POTC, it must be combined with a portion of the much smaller BLS series "Medical equipment and supplies". (About 86% of both BLS categories was accounted for by Non-Prescription Drugs in 2017.) Since "Nonprescription Drugs" is by far the largest component of the two combined BLS series as well as of POTC, it is unsurprising that the correlation coeffiicents of both sets of comparisons rounds to 100%

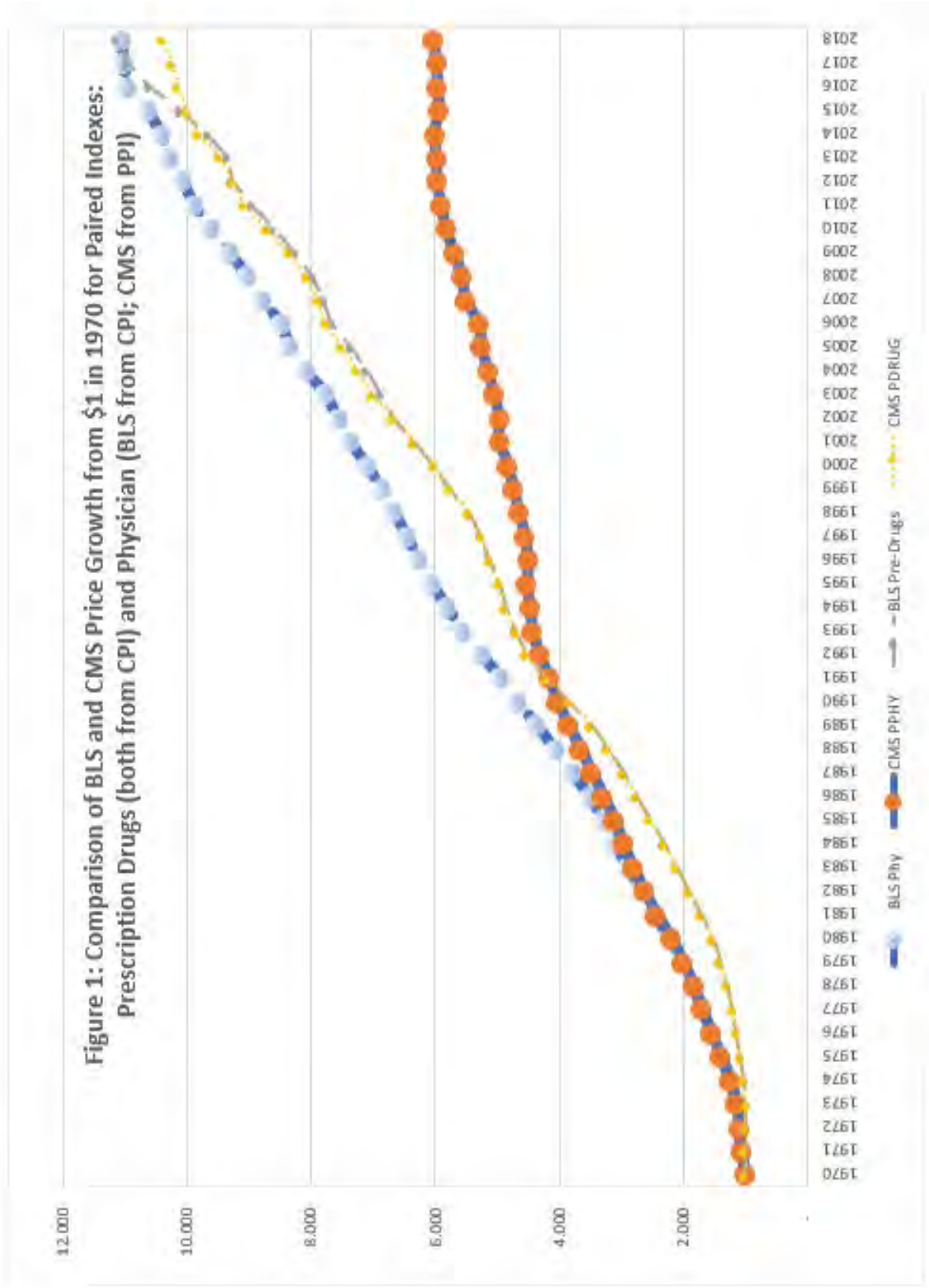
Figure 1: Comparison of BLS and CMS Price Growth from $1 in 1970 for Paired Indexes:
Prescription Drugs (both from CPI) and Physician (BLS from CPI; CMS from PPI)
12.000
10.000
8.000
6.000
4.000
2.000
1970
1971
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BLS Phy
CMS PPHY
BLS Pre-Drugs
CMS PDRUG

SECTION 6

CHOICES AND CONCLUSIONS INVOLVING

DATA FOR TO FORECAST FUTURE HEALTH CARE INFLATION

Economic damages experts often need to forecast future health care inflation, especially to value life care plans with the expense of different categories of medical goods and services to be incurred over many future years. There are generally divergent views among those who prefer to forecast health care prices based on various historical averages from the BLS data series versus those who prefer to forecast health care prices based on the CMS data which are forecasted for 10-years . Broadly speaking the arguments for each approach are explained in Table 9 below.

Table 9: Pros and Cons of Using BLS vs. CMS for Medical/Health Care Price Forecasting

	PROS	CONS
BLS	BLS indexes are all published data. They reflect actual observed prices	Future may not look like the past, especially given current flux of health care policies. It is also arbitrary as to what historical period average to use
	Indexes account for what the consumer actually pays. Indexes are not burdened by prices of payments from all insurers and third parties. Payments by Medicaid and Medicare Part A are explicitly excluded from indexes	Consumer healthcare spending by BLS only accounts for about 1/5 of all personal health care spending. In additon, the argument that life care plans are better served by BLS-based projections in order to focus on consumer out-of-pocket payments is undermined by the fact that almost 70% of consumer spending on healthcare tracked by BLS includes health insurance, i.e., insurance premimums paid for by the consumer as deductions from employee paychecks and as well as premiums for Medicare Parts B and D
	Collateral Source Rule prohibits mentioning of insurance payments to plaintiff in many cases	CSR is not absolute. In at least 38 states, plaintiff is not allowed to receive compensation more than once for the same medical expenses; and in at least 21 states, evidence of collateral source benefits may be introduced for medical malpractice
CMS	CMS provides both historical and 10-year forecasted index data. Anyone can request a copy, and the Office of the Actuary co-author is a referenceable source	While the overall Personal Healthcare (PHC) Index is published, the underlying detailed CMS indexes are all unpublished data. Some economists will not use the CMS indexes for this reason alone
	Indexes include payments by all payees to providers of health care. Weighted prices reflect the most comprehensive data, since bulk of spending involves negotiated prices paid by third-party providers, including private insurance, Medicare, and Medicaid	Some economists consider it a negative fact that CMS' PHC price indexes include payments made by all health care payers, and thus as compared with BLS indexes, are more heavily weighted by payments from insurers rather than from consumers

As Table 9 indicates, there are arguments pro and con for using either BLS or CMS as the basis for health care price forecasting. Besides the issue of using a published versus unpublished index source, there are at least three other issues that should be considered in choosing the most appropriate medical price index:

- **Both BLS and CMS price indexes are heavily weighted to include reimbursement by insurers and other third-party payers and payers, as opposed to the direct, non-insurance payments by health care consumers; thus, there is no pure index for which price-weights only reflect consumer non-insurance, out-of-pocket spending, which some economists might prefer.** Given that, one must consider to what degree health care price indexes should be weighted by the actual payments made by each type of payer, especially by each type of insurance payer;

- **The collateral source rule (CSR) has often been used to exclude any reference in trial to medical insurance payments, but does this necessarily apply to forecasting future medical prices?** As pointed out in "Statutory Modification of the Collateral Source Rule" (Feeley, et al, 2017), the CSR prohibiting any reference to medical insurance payments is no longer absolute in many jurisdictions. As of mid-2016, it was observed that 38 states and one jurisdiction do not allow plaintiff double recovery for medical expenses, and in at least 21 states, evidence of collateral source benefits may be introduced for medical malpractice. Moreover, even where reference to medical insurance payments remain prohibited, this does not necessarily preclude price projections that are weighted to incorporate insurer payments and insurance rebates to providers, something that both BLS and CMS indexes include to different degrees.

- **How much will future medical price growth rates resemble those of the past?** Life care plans often require projections for decades into the future. In addition, health care pricing is subject to heavy governmental involvement, and new polices and legislation appear likely to change the status quo well into the future. The U.S. healthcare system remains under increased pressure to contain health care costs, given the fact that at the U.S. currently spends about double per capita on health consumption among comparably wealthy countries.[10] Thus, damages experts that forecast health care inflation, especially for long-dated life care plans, might wish to express some humility and, frankly, conservatism in their forecasts, rather than assuming a continuation of past trends of historically-high health care price growth rates that will somehow continue unabated into the future.

In conclusion, as with many choices in the field of economic damages calculation, such as using historical averages versus current yields for discounting damage awards, there may be no right answer in choosing a data source to forecast future health care inflation. It may be that neither historical averages of the BLS medical care price indexes nor forecasts of the CMS personal health care indexes are appropriate to use in all cases. It may be appropriate to take account of jurisdictional factors regarding how the collateral source

rule is to be applied. It also may be appropriate to take account of plaintiff-specific factors. These might include whether the prices of medical expenses that will be incurred due to injury will reflect the bargaining power of private insurance, Medicare, Medicaid, or some combination of the above, regardless of whether or not a third-party payee is allowed to be mentioned at trial. As always, the economic damages expert needs to be able to defend his or her choice of methods, to be consistent in using them for both plaintiff and defense, and perhaps offer a range of results to underscore the inherently great uncertainty in forecasting health care price inflation.

End Notes

[1] The PHC price index for selected years can be found in Exhibit 1 of the Health Affairs paper in footnote 2; however, the values for all projected years can be found by selecting Tables under Downloads at: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected.html

[2] An appendix to this article provides two items: (1) a Quick Reference Guide to the NHE account categories; and (2) the CMS NHE historical data series and forecast for the period 2018-2027. Before comparing the differences between the historical price indices that both CMS the Bureau of Labor Statistics track and publish, it is useful explain how the latter are obtained.

[3] According to Foster, 2018, Table 1, "Consumer Expenditure Survey data exclude nursing home care spending". But in an August 22, 2019 email communication with Steve Henderson, Chief, Branch of Information and Analysis, Division of Consumer Expenditure Surveys, Bureau of Labor Statistics, it was explained that spending for temporary convalescent care or payment for nursing homes for others not living with the payee would be included, such as if a CE survey respondent reported helping with nursing home expenses for grandparents.

[4] BLS has three unpublished subcomponents that comprise its "Medical Equipment and Supplies" index: MG011 "Dressings and First Aid Kits", MG012 "Medical Equipment for General Use", and MG013 "Supportive and Convalescent Medical Equipment. Based on communications with Mr. Reed, an economist with the BLS Information and Analysis section of the Consumer Price Index, it was agreed that MG013 mainly included "durables" such as wheelchairs, mobility scooters, braces, canes and crutches; thus it would not be a bad approximation to deem the index "Medical Equipment and Supplies" to be 1/3rd durables and the other two components MG011 and MG012 to be mainly non-durables. Since prosthetics are mainly provided in the course of treatment by medical professionals and are priced within Medical Care Services.

[5] The issue of where CMS reflects the price of prosthetics is a more complex question than one might think. According to Mr. Keehan, since CMS records spending based on the establishment where it occurs, if someone is fitted for an artificial leg which is ordered and delivered to his house, then it would be included within durables or PDUR. However, if someone needs an artificial hip and schedules surgery to get this done, then spending would occur in a hospital and its price increases would be included in PHSP.

[6] From BLS Research Table R-1, the annual detailed expenditure "mean" by category multiplied by 130,001,000, the number of consumer units in the US in 2017 from BLS CE Table 1300, produces estimates of OOP spending before any allocated insurance spending were applied to produce the BLS medical care CPI indexes. These were mapped to the applicable CMS categories

to try and explain the large differences in OOP spending shown in Table 4. Judgement was applied to combine BLS category items 2b and 2c in Table 6, since the research Table R-1 only had a single category labeled "Care in convalescent or nursing home". https://www.bls.gov/cex/csxresearchtables.htm#allnew

[7] The BLS Research Table R-1 category label "Care in convalescent or nursing home" and "Medical care in retirement community" together roughly encompasses the two separate BLS Medical Care CPI indexes, B 2.b, and B 2.c, "Nursing home and adult day care services" and "Care of invalids, elderly and convalescents in the home". For the purpose of creating Table 7, the estimated OOP spending the above two categories from the BLS research Table R-1 are combined, and mapped to the two BLS Medical Care indexes, B 2.b, and B 2.c, which is then mapped for OOP spending comparison with three CMS categories: (1) "Nursing Home Facilities" - PNH, (2) "Other Health, Residential, and Personal Care", also referred to as "Personal Health Care" or POPER in CMS data series, and "Home Health Care" – PHH. Some imprecision in mapping is acknowledged as POPER does not neatly map to the above BLS categories. But since Personal Health Care - POPER accounts for only a small portion of OOP spending, $6.5 billion in 2017, as compared with $44.3 billion for Nursing Home Facilities – PNH and $9 billion for Home Health Care – PHH, a splitting of POPER would leave unchanged the main point about the magnitude of disparity in this one comparative area of OOP spending .

[8] It is acknowledged that CMS historical data only went through 2017 at the time of this report, although at the time the CMS forecast was performed, 9 months of 2018 were known. Therefore, in the interest of using the most recent annual data available from BLS, and given that the one-year out forecast by CMS was likely to be reasonably accurate, "historical" growth rates were calculated for all indexes though 2018.

[9] Medical services is a combination of several large categories of spending such as hospital services, physician and clinical services, dental services, long-term care services, and other professional services. This category does not include spending for medical goods like prescription drugs and durable medical equipment.

[10] The U.S. spent $10,224 per capita on health consumption in 2017, almost double (versus $5,280) the average among other comparable wealthy countries on a purchasing power parity (PPP) basis. https://www.healthsystemtracker.org/chart-collection/health-spending-u-s-compare-countries/#item-relative-size-wealth-u-s-spends-disproportionate-amount-health

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Appendix

1. NHE Quick Reference Guide. Pages 26-27 of this article.

The NHE Quick Reference Guide is included in this appendix, below. Use this link to download a copy of it.

https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/quickref.pdf

2. National Health Expenditure price projections, year to year % growth. February 2019 10 year projections for period 2018 through 2027. Page 28 of this article.

Quick Definitions for National Health Expenditure Accounts (NHEA) Categories

The following list is a quick reference to definitions of some of the type-of-expenditure and source-of-fund categories used in the NHEA. More detailed definitions can be found at the following web address: http://www.cms.gov/NationalHealthExpendData/downloads/dsm-17.pdf

Hospital Care:

Covers all services provided by hospitals to patients. These include room and board, ancillary charges, services of resident physicians, inpatient pharmacy, hospital-based nursing home and home health care, and any other services billed by hospitals in the United States. The value of hospital services is measured by total net revenue, which equals gross patient revenues (charges) less contractual adjustments, bad debts, and charity care. It also includes government tax appropriations as well as non-patient and non-operating revenues. Hospitals fall into NAICS 622 – Hospitals.

Physician and Clinical Services:

Covers services provided in establishments operated by Doctors of Medicine (M.D.) and Doctors of Osteopathy (D.O.), outpatient care centers, plus the portion of medical laboratories services that are billed independently by the laboratories. This category also includes services rendered by a doctor of medicine (M.D.) or doctor of osteopathy (D.O.) in hospitals, if the physician bills independently for those services. Clinical services provided in freestanding outpatient clinics operated by the U.S. Department of Veterans' Affairs, the U.S. Coast Guard Academy, the U.S. Department of Defense, and the U.S. Indian Health Service are also included. The establishments included in Physician and Clinical Services are classified in NAICS 6211-Offices of Physicians, NAICS 6214-Outpatient Care Centers, and a portion of NAICS 6215-Medical and Diagnostic Laboratories.

Other Professional Services:

Covers services provided in establishments operated by health practitioners other than physicians and dentists. These professional services include those provided by private-duty nurses, chiropractors, podiatrists, optometrists, and physical, occupational and speech therapists, among others. These establishments are classified in NAICS-6213 Offices of Other Health Practitioners.

Dental Services:

Covers services provided in establishments operated by a Doctor of Dental Medicine (D.M.D.) or Doctor of Dental Surgery (D.D.S.) or a Doctor of Dental Science (D.D.Sc.). These establishments are classified as NAICS 6212 Offices of Dentists.

Other Health, Residential, and Personal Care:

This category includes spending for Medicaid home and community based waivers, care provided in residential care facilities, ambulance services, school health and worksite health care. Generally these programs provide payments for services in non-traditional settings such as community centers, senior citizens centers, schools, and military field stations. The residential establishments are classified as facilities for the intellectually disabled (NAICS 62321), and mental health and substance abuse facilities (NAICS 62322). The ambulance establishments are classified as Ambulance services (NAICS 62191).

Home Health Care:

Covers medical care provided in the home by freestanding home health agencies (HHAs). Medical equipment sales or rentals not billed through HHAs and non-medical types of home care (e.g., Meals on Wheels, chore-worker services, friendly visits, or other custodial services) are excluded. These freestanding HHAs are establishments that fall into NAICS 6216-Home Health Care Services.

Nursing Care Facilities and Continuing Care Retirement Communities:

Covers nursing and rehabilitative services provided in freestanding nursing home facilities. These services are generally provided for an extended period of time by registered or licensed practical nurses and other staff. Care received in state & local government facilities and nursing facilities operated by the U.S. Department of Veterans Affairs are also included. These establishments are classified in NAICS 6231-Nursing Care Facilities and NAICS 623311-Continuing Care Retirement Communities with on-site nursing care facilities.

Prescription Drugs:

Covers the "retail" sales of human-use dosage-form drugs, biological drugs, and diagnostic products that are available only by a prescription.

Durable Medical Equipment:

Covers "retail" sales of items such as contact lenses, eyeglasses and other ophthalmic products, surgical and orthopedic products, hearing aids, wheelchairs, and medical equipment rentals.

Other Non-Durable Medical Products:

Covers the "retail" sales of non-prescription drugs and medical sundries.

Population:

The population used in the NHEA tables is defined as the U.S. Census resident population plus the net undercount.

Out-of-Pocket Payments:

Includes direct spending by consumers for all health care goods and services, including coinsurance, deductibles, and any amounts not covered by insurance. Premiums paid by individuals for private health insurance are not covered here, but are counted as part of Private Health Insurance.

Health Insurance:

This aggregated category includes; private health insurance, Medicare, Medicaid, CHIP, Department of Defense, and Department of Veterans Affairs. These plans provide enrollees and beneficiaries insurance against medical losses and, in some instances, directly provide medical care.

Private Health Insurance:

Includes premiums paid to traditional managed care, self-insured health plans and indemnity plans. This category also includes the net cost of private health insurance which is the difference between health premiums earned and benefits incurred. The net cost consists of insurers' costs of paying bills, advertising, sales commissions, and other administrative costs; net additions to reserves; rate credits and dividends; premium taxes; and profits or losses.

National Health Expenditure price projections, year-to-year % price growth:

February 2019 10-year projections for period 2018 through 2027

	Consumer Spending		Prescription		Home		Medical	Nursing	Other	Other	Over The	Personal	
	Deflator	Dental	Drugs	Durables	Health	Hospital	Services	Home	Professional	PPHC	Counter	Health Care	Physician
	PCWC	PDNT	PDRUG	PDUR	PHH	PHSP	PMSVC	PNH	POPC	POPER	POTC	PPHC	PPHY
1970	-	-	-	-	-	-	-	-	-	-	-	-	-
1971	4.2	6.4	0.0	1.8	6.2	7.4	7.0	5.5	6.5	6.1	3.8	6.1	7.0
1972	3.4	4.1	-0.5	0.2	3.3	5.5	4.6	4.6	3.6	3.3	0.9	3.8	3.0
1973	5.4	3.2	-0.2	0.2	4.0	5.2	4.5	5.6	3.5	4.6	1.1	3.8	3.4
1974	10.4	7.6	2.3	3.6	9.3	11.0	10.1	10.3	8.5	9.8	4.5	9.0	9.2
1975	8.3	10.3	6.2	8.3	12.1	11.3	11.3	9.6	10.9	10.8	10.6	10.8	12.1
1976	5.5	6.2	5.3	6.0	9.4	9.0	9.2	7.5	9.2	8.8	6.8	8.8	11.3
1977	6.5	7.6	6.1	6.5	9.6	7.8	8.1	7.1	8.1	7.9	6.9	7.9	9.3
1978	7.0	7.1	7.7	7.0	8.4	7.8	7.9	8.8	7.5	8.5	7.1	7.9	8.2
1979	8.9	8.3	7.8	6.1	9.2	9.5	9.2	9.3	8.7	9.5	7.5	9.0	8.8
1980	10.8	11.9	9.2	8.1	11.0	12.4	11.5	10.1	11.1	10.7	10.1	11.2	10.0
1981	9.0	9.6	11.4	9.2	10.7	13.9	12.2	10.1	10.3	10.4	12.4	12.0	10.3
1982	5.6	7.6	11.6	9.2	11.6	12.4	10.6	7.8	8.5	8.0	10.8	10.5	8.6
1983	4.3	6.8	11.0	6.2	8.8	7.5	7.1	6.1	7.1	6.1	7.5	7.3	6.7
1984	3.8	8.1	9.6	4.7	6.2	8.3	7.2	5.0	7.2	5.4	6.2	7.2	5.7
1985	3.5	6.3	9.5	4.3	6.3	8.8	6.9	3.6	6.1	4.2	5.4	6.8	4.6
1986	2.2	5.6	8.6	4.9	7.5	3.1	4.2	3.4	6.4	4.3	4.9	4.5	5.7
1987	3.1	6.8	8.0	4.0	6.7	2.9	4.2	3.3	6.6	4.4	5.3	4.4	5.6
1988	3.9	6.8	7.9	4.3	5.7	5.6	5.5	4.7	5.8	5.3	5.6	5.6	5.3
1989	4.4	6.3	8.7	4.6	5.5	6.9	6.2	5.9	5.4	6.1	6.1	6.3	5.2
1990	4.4	6.6	10.0	4.8	5.3	6.3	5.7	5.5	5.3	5.9	5.1	6.0	4.8
1991	3.3	7.4	9.9	4.5	5.3	4.8	4.6	4.5	5.3	4.9	4.5	4.9	3.5
1992	2.7	6.8	7.5	4.1	4.0	4.4	4.2	3.7	4.0	4.3	3.8	4.4	3.5
1993	2.5	5.3	3.9	3.0	3.2	4.5	3.7	3.1	3.2	3.8	3.4	3.7	2.5
1994	2.1	4.8	3.4	2.3	4.0	3.6	2.9	2.7	4.0	3.4	1.5	2.9	1.1
1995	2.1	4.9	1.9	3.5	1.8	3.6	2.7	3.6	1.8	3.6	0.7	2.6	0.9
1996	2.1	4.7	3.4	1.7	1.9	2.4	2.0	6.1	1.9	4.3	1.9	2.2	-0.2
1997	1.7	4.7	2.6	1.5	3.5	0.9	1.7	4.3	3.5	3.5	1.7	1.8	1.0
1998	0.8	4.2	3.7	1.9	2.8	0.7	1.8	4.3	2.4	3.3	1.3	2.1	2.1
1999	1.5	4.7	5.7	1.0	0.8	1.7	2.2	3.8	2.1	2.8	0.3	2.5	2.1
2000	2.5	4.6	4.4	1.8	3.7	2.6	2.7	5.6	2.0	4.4	0.6	2.9	1.7
2001	1.9	4.1	5.4	1.6	2.6	3.5	3.6	6.3	3.3	4.4	1.1	3.7	2.9
2002	1.3	4.5	5.2	0.1	2.3	4.6	2.9	3.8	2.7	2.9	-0.1	3.0	0.0
2003	1.9	4.1	5.2	0.3	0.3	4.3	3.2	3.3	3.1	2.3	1.3	3.3	1.6
2004	2.5	4.9	3.3	1.5	2.4	4.9	3.7	4.2	2.7	3.5	-0.2	3.5	2.0
2005	2.8	5.6	3.5	1.5	1.1	3.8	3.2	3.7	2.7	2.7	-0.7	3.1	2.0
2006	2.7	5.2	3.5	2.2	0.6	4.4	3.0	3.0	2.9	2.3	2.1	3.0	0.9
2007	2.5	5.1	1.4	1.6	1.8	3.5	3.7	4.7	2.7	3.1	1.6	3.3	4.0
2008	3.0	5.1	2.5	0.9	1.7	3.0	2.6	4.0	4.1	4.1	1.2	2.6	1.0
2009	-0.1	3.0	3.4	1.1	1.5	3.0	2.7	3.3	2.1	2.6	2.3	2.7	2.3
2010	1.7	2.7	4.3	-0.1	1.2	3.0	2.6	2.0	2.2	3.5	0.0	2.7	2.3
2011	2.5	2.3	4.2	0.6	0.0	2.1	1.8	2.4	1.4	3.1	-1.3	2.1	1.4
2012	1.9	2.3	1.9	1.1	0.8	2.5	1.9	1.4	1.0	2.2	0.7	1.8	1.2
2013	1.3	3.4	2.3	0.5	-0.1	2.2	1.4	0.8	1.7	2.2	0.0	1.5	0.1
2014	1.5	2.1	3.6	0.6	0.9	1.3	1.1	1.1	1.4	2.4	-0.8	1.4	0.6
2015	0.3	2.5	2.1	-0.3	1.1	0.9	0.5	2.1	0.8	1.9	-0.8	0.7	-1.1
2016	1.1	2.8	1.4	0.6	1.6	1.2	1.1	2.6	1.2	2.9	-1.2	1.2	0.2
2017	1.8	1.6	0.9	0.2	0.9	1.7	1.4	2.5	2.4	1.3	0.8	1.3	0.4
2018	**2.3**	**2.7**	**1.5**	**0.9**	**2.3**	**2.3**	**1.8**	**3.1**	**0.3**	**1.6**	**-0.5**	**1.7**	**0.7**
2019	**2.3**	**2.9**	**2.1**	**0.8**	**2.3**	**2.1**	**1.9**	**3.6**	**1.4**	**2.4**	**0.1**	**1.9**	**1.0**
2020	**2.2**	**3.2**	**2.5**	**1.2**	**2.4**	**2.3**	**2.2**	**3.7**	**2.0**	**3.0**	**0.6**	**2.2**	**1.4**
2021	**2.2**	**3.4**	**2.8**	**1.3**	**2.4**	**2.6**	**2.4**	**3.7**	**2.2**	**3.1**	**1.0**	**2.4**	**1.6**
2022	**2.2**	**3.6**	**3.0**	**1.4**	**2.4**	**2.7**	**2.5**	**3.8**	**2.4**	**3.2**	**1.3**	**2.6**	**1.8**
2023	**2.2**	**3.7**	**3.2**	**1.3**	**2.5**	**2.8**	**2.7**	**3.8**	**2.7**	**3.3**	**1.5**	**2.7**	**2.1**
2024	**2.2**	**3.8**	**3.3**	**1.3**	**2.5**	**2.8**	**2.7**	**3.8**	**2.8**	**3.3**	**1.7**	**2.8**	**2.2**
2025	**2.2**	**3.8**	**3.3**	**1.2**	**2.6**	**2.8**	**2.8**	**3.8**	**2.8**	**3.3**	**1.8**	**2.8**	**2.3**
2026	**2.2**	**3.8**	**3.4**	**1.2**	**2.6**	**2.9**	**2.8**	**3.8**	**2.9**	**3.4**	**1.9**	**2.9**	**2.3**
2027	**2.2**	**3.8**	**3.4**	**1.2**	**2.5**	**3.0**	**2.9**	**3.8**	**2.9**	**3.4**	**1.9**	**2.9**	**2.3**