

TEA. 18.1

CMS Health Care Price Projections and  
Issues for Damages Experts,  
Updated for 2021-2030

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## **Abstract**

This article is an update from one published in 2019. It includes the latest historical data and methodologies, leading to new health care price projections.

Economic damages experts have the difficult task of forecasting health care price inflation, especially for life care plans. This paper examines the strengths and weaknesses of two commonly used methods of forecasting the price of health care goods and services: One directly uses 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 health care data embedded within the Consumer Price Index (CPI) published by the Bureau of Labor Statistics (BLS). Here, CMS and BLS health care price indexes are mapped together, definitional differences are examined, direct out-of-pocket spending is segregated from insurance-related spending, and the historical price growth rates are compared and analyzed.

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Author: Joseph I. Rosenberg,

Title: MBS, MA, CFA, CDFA

Affiliation: Joseph I. Rosenberg, CFA, LLC

Mailing Address: 9821 La Duke Drive, Kensington, MD 20895

Tel. No.: 301-802-0617

Email Address: [jrosenberg123@gmail.com](mailto:jrosenberg123@gmail.com)

Author: Sean P. Keehan

Title: Senior Economist

Affiliation: Centers for Medicare & Medicaid Services (CMS), Office of the Actuary

Mailing Address: 7500 Security Boulevard, Baltimore, MD 21244

Tel. No.: 410-786-7158

Email Address: [sean.keehan@cms.hhs.gov](mailto:sean.keehan@cms.hhs.gov)

## Acronym List:

| <b>Acronyms #1 *</b> | <b>Name</b>  |
|----------------------|--|
| 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 Expenditures   |
| 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  |
| PHI                  | Private Health Insurance   |
| 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   |
| <b>Acronyms #2 *</b> |  |
| PGPH                 | (Price of) Government Public Health  |
| PNCST                | (Price of) Net Cost of Health Insurance  |
| PGADM                | (Price of) Government Administration   |
| PRES                 | (Price of) Research  |
| PSTR                 | (Price of) Structures  |
| PEQP                 | (Price of) Equipment   |
| PNHE                 | (Price of) National Health Expenditures  |

\* Acronyms are shown in two groups. Group #1 pertains to those indexes that economists are most likely to use in their work, such as in life care plans. Group #2 pertains only to non-personal health care spending. See detailed definitions in Table 2.

## **1. Overview of CMS Health Care Price Projections**

Usually, economic damages experts encounter difficulties 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 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). This paper builds on the 2019 paper by updating the data and giving additional reasons and justifications for using both methods.

The Office of the Actuary at CMS annually publishes historical estimates (usually in December) and 10-year projections (recently in March) of the National Health Expenditure (NHE) Accounts. The goal of the annual historical accounts update is “measuring the total annual dollar amount invested in medical care structures and equipment and non-commercial research.” (CMS, Dec 2021).

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.), source of payment (private health insurance, Medicare, Medicaid, etc.), and by sponsor of payment as shown in Table 1:

**TABLE 1A: NHE CLASSIFICATION BY TYPE OF EXPENDITURE**

**National Health Expenditures (NHE)**

- Health Consumption Expenditures
  - Personal Health Care (PHC)
    - 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

**TABLE 1B: NHE CLASSIFICATION BY SOURCE OF FUNDING/PAYER**

**National Health Expenditures (NHE)**

- Out-of-Pocket
- Health Insurance
  - Private Health Insurance (PHI)
  - 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 Revenues

**TABLE 1C: NHE CLASSIFICATION BY SPONSORS OF PAYMENT**

**National Health Expenditures (NHE)**

- Businesses, Households, and Other Private
  - Private businesses
    - Employer contributions to private health insurance premiums
    - Other
  - Household
    - Household private health insurance premiums
    - Medicare payroll taxes and premiums

- Out-of-pocket health spending
- Other private revenues
- Governments
  - Federal government
    - Employer contributions to private health insurance premiums
    - Employer payroll taxes paid to Medicare hospital insurance trust fund
    - Medicare
    - Medicaid
    - Other programs
  - State and local governments
    - Employer contributions to private health insurance premiums
    - Employer payroll taxes paid to Medicare hospital insurance trust fund
    - Medicaid
    - Other programs

At the highest level, the dollar amount devoted to health care spending in 2020 was \$4.124.0 billion. As a share of Gross Domestic Product (GDP), health care spending was 19.7% (Hartman et al, 2021). Of this total, Personal Health Care (PHC), shown in Table 1, accounted for 81.4%.

When the most recent NHE Projections were published in March 2022 (Poisal, et al 2022), 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 2030 (non-PHC price indexes were also updated). 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 a more general round of external peer review. (The utilization 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, March

2022). In this 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.<sup>1</sup> For this large, aggregated category of PHC, that information is presented in Table 2.

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<sup>1</sup> The PHC price index for selected years can be found in Exhibit 1 of the Health Affairs paper in endnote 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>.

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

| Industry/Commodity or Service   | Price proxy   | 2018 % weight | NHE/CMS Acronym |
|---|---|---------------|-----------------|
| PHC   |   | 100.00        | PPHC            |
| Hospital Care   | PPI hospitals*  | 37.83         | PHSP            |
| Physician and Clinical Services   | Composite Index: PPI for Office of Physicians and PPI for medical & diagnostic laboratories             | 24.11         | PPHY            |
| Other Professional Services   | CPI services by other medical professionals   | 3.50          | POPC            |
| Dental Services   | CPI dental services   | 4.24          | PDNT            |
| Home Health Care  | PPI home health care services   | 3.68          | PHH             |
| Other Health, Residential, and Personal Care:   |   | 6.22          | 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   | 5.86          | PNH             |
| Prescription Drugs  | CPI prescription drugs  | 10.38         | PDRUG           |
| Other Non-Durable Medical Products  | CPI internal & respiratory over-the-counter drugs   | 2.55          | POTC            |
| Durable Medical Equipment   | Composite Index: CPI for eyeglasses and eye care and CPI nonprescription medical equipment and supplies | 1.64          | 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 37.8 percent because in 2020, hospital care spending was \$1,270.1 billion while personal health care spending was \$3,357.8 billion ( $1270.1 / 3357.8 = 0.378$ ).

The most recent set of NHE Projections was the first time that the impact from the COVID-19 pandemic was estimated historically and projected going forward. Although everyone felt enormous changes to their lifestyles during the pandemic, the impact of the pandemic on the growth in health care prices was only modest. For example, in the



most recent NHE Projections, the average annual growth rate of PPHC was 2.7 percent from 2020 to 2028.<sup>2</sup> In the previously published (March 2020) NHE Projections, the average annual growth rate of PPHC was just 0.2 percentage point lower at 2.5 percent from 2020 to 2028. The impact of the COVID-19 pandemic has increased health care prices somewhat due primarily to higher wage growth; however, the impact on health care prices has been somewhat muted because contracts with insurers and the government have limited how much providers can increase their prices.<sup>3</sup>

Recently, CMS has begun publishing PNHE as well as PPHC in the Health Affairs table and on the CMS website. However, it is likely that forensic economists will be more interested in PPHC instead of PNHE because the components of the PPHC index are what typically goes into life care plans. PNHE is a broader price index and it is possible that some may be interested in how this index is constructed; therefore, the non-PHC components of these indexes can be found at the top of this table.

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

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<sup>2</sup> When the NHE Projections were published in March 2022, the outlook for economy-wide price inflation was tied to the consensus estimates of the January 2022 Blue Chip Economic Indicators report, which predicted the GDP price index to grow 3.9 percent in 2022 and 2.5 percent in 2023. Six months later, consensus estimates have increased significantly with the July 2022 Blue Chip Economic Indicators report calling for the GDP price index to grow 6.4 percent in 2022 and 3.5 percent in 2023. Higher economy-wide price inflation will also lead to higher projections of price growth of health care goods and services when these projections are next updated.

<sup>3</sup> For more information, see M Fiedler, “What does economy-wide inflation mean for the prices of health care services (and vice versa)?”, 29 March 2022, <https://www.brookings.edu/blog/usc-brookings-schaeffer-on-health-policy/2022/03/29/what-does-economy-wide-inflation-mean-for-the-prices-of-health-care-services-and-vice-versa/> and E Wager et al, “Overall inflation has not yet flowed through to the health sector,” 3 June 2022, <https://www.healthsystemtracker.org/brief/overall-inflation-has-not-yet-flowed-through-to-the-health-sector>. Since inflation projections can change frequently, some economists update each of the CMS price projection indexes by a two-step process: first, deriving the real price growth rates underlying each index after backing out the general inflation component for consumer spending, PCWC; and then, after replacing it with a more current set of general inflation projections, all of the other price indexes can be recalculated to obtain nominal growth rates by year.

Consumer Price Index for dental services is a good proxy for how much the cost of that service is increasing over time.

## **2. How BLS Health Care Price Indexes Compare with Those of CMS**

As explained in our 2019 TEA article, 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, March, 2022)

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 displays the definitions of the BLS' published medical care indexes and their relative importance within the consumer spending portion of GDP, as of December 2021 (BLS, March, 2022).

**Table 3. Definitions of published medical care indexes and relative importance as of December 2021.**

| Item   | Definition   | Relative importance (percent) | % of the Medical Care Index |
|--|--|-------------------------------|-----------------------------|
| Medical care                                       | Medical care commodities and medical care services   | 8.487                         | 100%                        |
| <b>A. Medical care commodities</b>                 | Prescription drugs, nonprescription over-the-counter-drugs, and other medical equipment and supplies   | 1.524                         | <b>17.96%</b>               |
| 1. Medicinal drugs                                 | All prescription and over-the-counter drugs  | 1.422                         | 16.76%                      |
| 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.  | 1.044                         | 12.30%                      |
| b. Nonprescription drugs                           | All nonprescription drugs, including topicals  | 0.378                         | 4.45%                       |
| <b>2. Medical equipment and supplies</b>           | Nonprescription medicines and dressings used externally, contraceptives, and supportive and convalescent medical equipment (e.g., adhesive strips, heating pads, athletic supporters, and wheelchairs)   | 0.103                         | 1.21%                       |
| <b>B. Medical care services</b>                    | Professional medical services, hospital services, nursing home services, adult day care, and health insurance  | 6.962                         | <b>82.03%</b>               |
| 1. Professional services                           | Physicians, dentists, eye care providers, and other medical professionals  | 3.585                         | 42.24%                      |
| 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.) | 1.9                           | 22.39%                      |
| 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.                                      | 0.924                         | 10.89%                      |
| 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.                                     | 0.371                         | 4.37%                       |
| <b>d. Services by other medical professionals</b>  | 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 imaging services.         | 0.39                          | 4.60%                       |
| <b>2. Hospital and related services</b>            | Services provided to inpatients and outpatients. Includes emergency room visits, nursing home care and adult day care.   | 2.573                         | 30.32%                      |
| a. Hospital services                               | Services provided to patients during visits to hospitals, ambulatory surgical centers, or other similar settings.  | 2.199                         | 25.91%                      |
| 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>b. Nursing home and adult day care services</b> | 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.   | 0.21                          | 2.47%                       |
| <b>c. Care of invalids and elderly at home</b>     | 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   | 0.164                         | 1.93%                       |
| <b>3. Health Insurance</b>                         | Indirect approach based on retained earnings method. See Health Insurance section.   | 0.804                         | 9.47%                       |

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

As explained in our 2019 TEA article, 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, March, 2022)

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 and Bieir, 2019)

The article goes on to explain the issue of “overrepresentation of self-pay quotes” (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.

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.<sup>4</sup>

In a more recent but limited explanation of differences, with the NHE accounts (or NHEA), BLS stated the following:

“... the CE estimates of aggregate annual expenditures of total health care, private health insurance,<sup>5</sup> Medicare Supplementary Insurance Trust Fund, prescription drugs, dental services, and other professional services have historically compared well, with estimates ranging from 65 to 124 percent of those from NHEA. Deviations between the two products are directly attributed to coverage, definitional, and measurement differences. Specifically, differences in estimates from CE and NHEA could partially be the result of the differing

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<sup>4</sup> 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.

<sup>5</sup> Private health insurance is also referred to as commercial insurance payments (individually purchased or purchased by employers) for those under age 65.

sample pools. The CE obtains information from individual consumer units, while the NHEA uses information from U.S. businesses from the SAS [Services Annual Survey] and the Economic Census. The CE is designed to represent the U.S. civilian noninstitutionalized population and excludes those living in institutions, such as a nursing homes or prisons, and active-duty members of the U.S. Armed Forces living on base. The NHEA covers the larger resident population, which includes all persons, both military and civilian, living in the United States.” (BLS, Oct. 2021)

Table 4 presents a high-level comparison of BLS data with CMS data. 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 2020 all consumer spending on health care was \$679,445 billion, an increase of 6% since 2017. (BLS, Table 1300, 2020 and 2017). Backing out \$481,223 billion for health insurance, this leaves \$198,222 billion for non-insurance consumer spending on health care or just under 1% of GDP ( $= \$198.222 / \$20,893.7$ ). Including the BLS calculation of health insurance, total health care spending in 2020 accounted for 3.25% of GDP ( $= \$679.445 / \$20,893.7$ ). Thus, within total consumer health care spending, only 29.2% ( $= \$198.222 / \$679.445$ ) was from non-health insurance spending, with the remaining 70.8% from health insurance.

As explained in footnote 4 to Table 4, the health insurance premium subtotal that BLS assigns to medical providers that is reflected in its price component weights can be obtained in aggregate. This is done by backing out the 9.47% of all medical care in the CPI for health insurance that is not assigned to medical care providers, estimated by BLS via its indirect

approach to exclude “retained earnings” (what BLS attributed to insurers’ administrative costs and profits). Since 9.47% of its entire medical care CPI accounts for \$64,366 billion, backing this out of its reported \$481,223 billion in total for health insurance paid my consumers, we can observe that the residual, \$416,857 billion, is insurance reimbursements assigned to various medical providers. Thus, it can be said that 67.8% of all BLS medical care indexes represents payments from insurers to medical care providers, and not payments made directly to providers when consumers actually purchase each individual medical goods and services.

As Table 4 shows, there exists a large disparity between the dollar amount of non-insurance or third-party spending by consumers in 2020, \$198.2 billion according to BLS, and the amount of out-of-pocket spending on personal health care, \$388.6 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.



In any case, by comparison CMS personal health care spending as measured by its various goods and services component indexes is more heavily weighted toward health insurance and third-party payers, at 88.4%, vs. 67.8% for BLS, as explained and derived above.

|  | Total Non-Health Insurance or Third-Party Spending | Total Health Insurance Spending | Other Third Party Payers (2) | Total Consumer/Personal Health Care Spending (3) | Insurance Payments to Providers Embedded in BLS Price Indices for Medical Goods & Services (4) | % of Insurance/Third Party Spending Included in Medical/Health Care Price Indices |
|--|--|---------------------------------|------------------------------|--|--|---|
| <b>BLS (all OOP)</b>                         | \$198.22   | \$481.22                        | \$0.00                       | \$679.44   | \$416.86   |   |
| <b>% GDP</b>                                 | 0.95%  | 2.30%                           | 0.00%                        | 3.25%  | 2.00%  |   |
| <b>% Total Consumer Health Care Spending</b> | 29.17%   | 70.83%                          | 0.00%                        | 100.00%  | 61.35%   | 67.77%  |
| <b>CMS</b>                                   | \$388.60   | \$2,491.10                      | \$478.10                     | \$3,357.80                                       |  |   |
| <b>% GDP</b>                                 | 1.86%  | 11.92%                          | 2.29%                        | 16.07%   |  |   |
| <b>% Total Personal Health Care Spending</b> | 11.57%   | 74.19%                          | 14.24%                       | 100.00%  |  | 88.43%  |

(1) Sources: BLS: Consumer Expenditure (CE) Survey, Table 1300, and BLS Factsheet "Measuring Price Change in the CPI: Medical Care", Last Modified March 16, 2022; 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 by residents along with other institutionalized populations. Nursing home spending on behalf of nursing home residents accounts for about 2.5% of the BLS Medical Care index.

(4) Derived from % of BLS Medical Care Index attributed to "Health Insurance" via indirect approach based on retained earnings method, with remainder of insurance premiums applied to various providers of medical care goods and services.

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 is presented to disaggregate total OOP spending attributable by CMS to each PHC category, which collectively account for 11.6% of PHC in 2020 (down from 12.3% in 2017). 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**

|    |   | 2020<br>(\$ billions) | Share of OOP<br>Spending | OOP as<br>Share of<br>Each Type of | Non-OOP<br>Share of<br>Each Type of |
|----|---|-----------------------|--------------------------|------------------------------------|-------------------------------------|
| #  | OOP Personal Health Care Expenditures   | 388,646               | 100.0%                   |                                    |                                     |
| 1  | Hospital                                | 32,450                | 8.3%                     | 2.6%                               | 97.4%                               |
| 2  | Physician                               | 59,411                | 15.3%                    | 7.3%                               | 92.7%                               |
| 3  | Dental                                  | 53,198                | 13.7%                    | 37.4%                              | 62.6%                               |
| 4  | Other Professionals                     | 25,771                | 6.6%                     | 22.0%                              | 78.0%                               |
| 5  | Home Health                             | 12,621                | 3.2%                     | 10.2%                              | 89.8%                               |
| 6  | Prescription Drugs                      | 46,460                | 12.0%                    | 13.3%                              | 86.7%                               |
| 7  | Other Non-Durables                      | 83,424                | 21.5%                    | 97.3%                              | 2.7%                                |
| 8  | Durables                                | 23,270                | 6.0%                     | 42.4%                              | 57.6%                               |
| 9  | Nursing Home                            | 45,276                | 11.6%                    | 23.0%                              | 77.0%                               |
| 10 | Other Personal Health Care              | 6,764                 | 1.7%                     | 3.2%                               | 96.8%                               |
|    | Total Personal Health Care Expenditures | 3,357,800             |                          |                                    |                                     |
|    | OOP as % of PHC                         | 11.6%                 |                          |                                    |                                     |

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”.

### **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 presents a mapping of those components of the CPI with the CMS/NHE price projection categories. Since the BLS percentages include the insurance payments made by consumers that were passed through to medical goods and services providers, the mapping of CMS-to-BLS indexes includes all expenditures tracked by CMS including from consumers as well as from medical/health care providers.<sup>6</sup>

While most of the health care categories between BLS and CMS mapped easily by indexes, one-to-one, two CMS indexes required split-mapping to three BLS indexes: CMS indexes POTC and PDUR are split-mapped to the BLS categories of “Nonprescription drugs”, “Medical equipment and supplies”, and “Eyeglasses and eyecare”. However, this latter BLS category obviously combines eyeglasses as medical “goods” as well as the eyecare “services” of various professionals including ophthalmologists, optometrists, and opticians. A more precise mapping of BLS to CMS indexes that separates medical goods from services is only obtainable by using the BLS Research Table R-1 that provides more specific OOP (out-of-pocket) spending for each good and service, separating all insurance spending by consumers that reimburses providers and is embedded in the CPI weights, as explained above. This is

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<sup>6</sup> Note that the column in Table 6 labeled “Excludes Only Retained Earnings % of Health Ins.,” distributes only the 9.47% of the CPI index that BLS estimates that insurers retain to cover administrative expenses and profits. Due to lack of specifics in assigning the bulk of insurance payments by consumers to each specific category of medical provider, a pro-rata distribution of those insurance payments tracked by BLS is performed in this column. The result is an imperfect but relatively consistent comparison, definitionally, with each CMS index which includes expenditures by all consumers and medical providers.

accomplished in the next section.

For purposes of this section and Table 6, it is noted that a change is made from how the split-mapping was done our 2019 TEA article. Here, an improved split-mapping procedure of the two CMS indexes, POTC and PDUR, is derived from breakouts of publicly available data from the Bureau of Economic Analysis (BEA) which are roughly similar to the NHE share numbers produced by CMS. How these BEA breakouts were used in splitting the two CMS indexes in mapping them to similar BLS indexes, plus how one combined set of CMS indexes maps to a single BLS index, are all explained below:

- **POTC (Over-the-Counter drugs) mapped to BLS “Nonprescription drugs”:**  
The CMS category POTC mainly but not exclusively tracks Over-The-Counter or OTC drugs. According to BEA, of all “Personal Consumption Expenditures by Type of Product” under “Other nondurable goods” there are three subtotals that comprise “Pharmaceutical and other medical products”: “Prescription drugs”, “Nonprescription drugs”, and “Other medical products”. Since the latter two describe what are included in POTC, it is reasonable to assume that since  $92.5\% = \frac{\text{expenditures on “Nonprescription drugs”}}{\text{expenditures on “Nonprescription drugs”} + \text{expenditures on “Other medical products”}}$ , then  $92.5\%$  of POTC should map to the BLS index “Nonprescription drugs”. Hence  $92.5\%$  of the  $2.552\%$  total POTC within CMS = **2.36%**;
- **PDUR (Durables) mapped to BLS “Eyeglasses and eyecare”:** The CMS category PDUR includes retail sales of items such as contact lenses, eyeglasses and other ophthalmic products, surgical and orthopedic products, hearing aids, wheelchairs, and medical equipment rentals. According to BEA, under “Other durable goods”, there are two categories of “Therapeutic appliances and equipment”:

“Corrective eyeglasses and contact lenses” which equals 52.1% of that BEA subtotal, and “Therapeutic medical equipment” which equals 47.9% of that same BEA subtotal. Hence, applying the most relevant of the two, 52.1% of the 1.635% of total PDUR within CMS = **0.85%**.<sup>7</sup>

- **POTC and PDUR mapped to BLS “Medical equipment and Supplies”:** The remaining portions of POTC and PDUR are mapped to BLS’ “Medical equipment and supplies” as two residuals. First, there is 7.5% for all POTC not attributable to “Nonprescription drugs” based on the percentage of “Other medical products” of the BEA subtotal that also included “Nonprescription drugs”: 7.5% of the 2.552% total POTC within CMS = **0.19%**. Second, there is the 47.9% of all PDUR not attributable “Eyeglasses and eyecare” based on the percentage of “Therapeutic appliances and equipment” that was not attributable to “Corrective eyeglasses and contact lenses”: 47.9% of the 1.635% total PDUR within CMS = **.78%**. Combining both POTC and PDUR contributions, **.97%** of the CMS Personal Consumption indexes total maps to the BLS index “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 5.86% and 6.22% of the overall CMS PHC spending, their combined

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<sup>7</sup> Note: Presumably a small portion of the CMS index POPC for “Other Professional Services” includes services of optometrists, and a small portion of the CMS index PPHY for “Physician” includes the services of ophthalmologists, but in both cases, there may be some blurring of spending on eyeglasses and contact lenses as embedded in the goods sold vs. the services paid to providers for examinations. Some of this mapping limitation is unavoidable, but it is improved upon in the section containing Table 7 which provides a more precise distinction between OOP spending on goods vs. services.

weight of **12.08%** is mapped to the **2.73%** 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 excluding 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 | Excludes Only Retained Earnings % of Health Ins. (1) | Comparable CMS Category Name                  | CMS Label (color-coded for split; based on Total CMS %s ) (2) | Percentage | Delta % |
|---|--------------------------------------|--|---|---|------------|---------|
| Medical care  | 100%                                 |  |   |   |            |         |
| A. Medical care commodities                         | 17.96%                               |  |   |   |            |         |
| 1. Medicinal drugs                                  | 16.76%                               |  |   |   |            |         |
| a. Prescription drugs                               | 12.30%                               | 13.59%   | Presc Drugs                                   | PDRUG   | 10.38%     | -3.2%   |
| b. Nonprescription drugs                            | 4.45%                                | 4.92%  | Over the Cntr                                 | POTC  | 2.36%      | -2.6%   |
| 2. Medical equipment and supplies                   | 1.21%                                | 1.34%  | Durables & Non-Durables                       | PDUR, POTC  | 0.97%      | -0.4%   |
| B. Medical care services                            | 82.03%                               |  |   |   |            |         |
| 1. Professional services                            | 42.24%                               |  |   |   |            |         |
| a. Physicians' services                             | 22.39%                               | 24.73%   | Physician                                     | PPHY  | 24.11%     | -0.6%   |
| b. Dental services                                  | 10.89%                               | 12.03%   | Dental Services                               | PDNT  | 4.24%      | -7.8%   |
| c. Eyeglasses and eye care                          | 4.37%                                | 4.83%  | Durables                                      | PDUR  | 0.85%      |         |
| d. Services by other medical professionals          | 4.60%                                | 5.08%  | Other Professional Services                   | POPC  | 3.50%      | -1.6%   |
| 2. Hospital and related services                    | 30.32%                               |  |   |   |            |         |
| a. Hospital services                                | 25.91%                               | 28.62%   | Hospital Care                                 | PHSP  | 37.83%     | 9.2%    |
| b. Nursing home and adult day care services         | 2.47%                                | 2.73%  | Nursing Home & Other Personal Health Care Svc | PNH: 5.86%<br>POPER: 6.22%                                    | 12.08%     | 9.3%    |
| c. Care of invalids and elderly at home             | 1.93%                                | 2.13%  | Home Health                                   | PHH   | 3.68%      | 1.5%    |
| 3. Health Insurance, Retained Earnings Estimate (1) | 9.47%                                |  |   |   |            |         |
| Sum   | 100.00%                              | 100.00%  |   |   | 100.00%    |         |

(1) As noted in Table 3, to calculate CPI weights, BLS assigns consumer payments for insurance to each medical goods and services provider. The BLS "Indirect method" leaves only an estimate of retained earnings to cover insurers' administrative costs and profit. CMS % totals include spending by all providers types and insurers. Since only the estimated aggregate retained earnings of insurers is available in BLS data, backing out this % prorata among providers only allows an approximate comparison of the spending percentage breakouts between BLS and CMS.

(2) CMS index mapping based on total CMS percentages, including insurance, required splitting at least two indices, PDUR and POTC. The splitting here was based on the BEA Personal Consumption Expenditures by Type of Product, which generally attempts to separate spending on medical goods from medical services, although certain medical services may be priced into the product at point of delivery. A more precise mapping is presented in Table 7, for which BLS Research Table R-1 separates OOP (out-of-pocket) spending from insurance reimbursement to providers, which can readily be mapped against OOP spending, which is entirely separated in CMS data.

#### 4. Comparison of Out-of-Pocket Spending between BLS and CMS

Using the BLS CE survey, Research Table R-1,<sup>8</sup> 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 means that the remaining estimated spending in dollars from the BLS CE survey is direct OOP spending by consumers and can be mapped directly to the CMS OOP spending shown in Table 5, above. This allows a more precise mapping of OOP spending by category, in dollars, between BLS and CMS. This is shown in Table 7.

Overall, the magnitude of direct OOP spending, excluding payments made through insurance or other third-party payers, is roughly double as accounted for by CMS vs. BLS: \$388,466 million to \$198,176 million, respectively ( $\$388,466 - \$198,176 = \$190,470$  million).<sup>9</sup> Three BLS categories account for most (72%) of the \$190,470 million difference in direct OOP spending. These are, all in millions: “Nonprescription drugs” - \$48,669; “Physician services” - \$38,269; and “Nursing home and adult day care services” – \$50,204.

Unsurprisingly, the nursing home category accounts for the largest discrepancy in direct OOP spending between BLS and CMS. Since BLS excludes spending by institutional populations,

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<sup>8</sup> The same methodology as in our 2019 TEA article is again used here but with the updated 2020 BLS Research Table R-1. The annual detailed expenditure “means” by category in Table R-1 are multiplied by 131,234,237, the number of consumer units in the US in 2020 from BLS CE Table 1300 (shown in further detail in Table R-1); this 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>

<sup>9</sup> Recall that the BLS OOP subtotals that sum to \$198,176 million are for direct payments by consumers to medical care providers, but insurance payments going from consumers through insurers as reimbursements to medical providers do get included into the CPI weights that BLS reports for each index. The insurance payments that BLS does track are premiums paid by consumers as deductions from employee paychecks as well as payments for Medicare Parts B and D, but not for Part A or Medicaid.

such as those living in nursing homes, only a very small amount of consumer spending is included in this category from its CE survey (probably made mainly by non-resident relatives of nursing home residents). This spending is reported in BLS Research Table R-1 as “Care in convalescent or nursing home”, which, with BLS, is the CE category that maps to the CPI category “Nursing home and adult day care services” shown in Table 7. In 2020, this CE category accounted for \$1,836 million, almost four times greater than the amount shown in 2017.<sup>10</sup> Due to the BLS’ exclusion of spending by actual institutionalized nursing home residents, the comparable CMS OOP spending in its categories of “Nursing Home” and “Other Personal Health Care”, \$52,040 bil., is over 2,700% greater than BLS!

Regarding “Nonprescription drugs”, the very large OOP spending difference appears to result from what is collected for this health care category by two different government agencies: BEA vs. BLS. CMS derives its spending for “Nonprescription drugs” based on the fact that it accounts for 92.5% of the BEA’s sum of a subtotal comprised of “Nonprescription drugs” and “Other [non-durable] medical products”, both of which CMS includes in its larger category of POTC which is labeled “Other Non-Durable Medical Products”. It may be that in its CE survey, BLS simply does not capture as broad an array of “Nonprescription drugs”, such as analgesics and cough and allergy medications or results from other survey limitations, In any case, with only minor differences between the 92.5% allocation of CMS OOP spending on POTC (\$77.2 bil.) and the actual dollar amount of “Nonprescription drug” spending as reported by BEA (\$79.3 bil.), the CMS OOP spending exceeds BLS OOP spending of \$28.5 bil.) based on its CE survey by over 170%.

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<sup>10</sup> A similar CE category to nursing homes from Table R-1 is “Medical care in retirement community”. This was quite small in the 2017 CE survey and in the 2020 survey the results were left blank, described as “Value is too small to display”.



Regarding “Physician services”, the very large OOP spending difference may result from two separate factors. First, the CMS/NHE relies on a Census Bureau survey that may include a broader array of physician services than does BLS based on those North American Industry Classification System or NAICS codes that are applicable to physician services. These codes include NAICS 6211 for Offices of Physicians (Doctors of Medicine or M.D. and Doctors of Osteopathy or D.O.); NAICS 6214 for outpatient care centers; and a portion of NAICS 6215 for that portion of medical and diagnostic laboratory services that are billed independently by the laboratories. A second reason for this OOP spending difference may depend on how much of OOP spending on physician services are picked up when Medicare pays the majority but not all of the bill, since BLS excludes Medicare payments.

One improvement from our 2019 TEA article is made by utilizing BLS Research Table R-1 to segregate OOP spending on “Eyeglasses and contact lenses” from that of “Eyecare services”. Focusing only on the former, “Eyeglasses and contact lenses”, we find one of the smallest differences in OOP spending between the two data sets, in which CMS is 14.6% higher.

One correction from our 2019 TEA article is made here regarding the mapping of BLS CPI category “Care of invalids and elderly at home”. In our 2019 article, the subtotal \$6,607 million reported in 2017 in BLS Research Table R-1 for CE (Consumer Expenditure) category “Non physician services inside home” was incorrectly mapped to the CPI category “Services by other medical professionals”, thus inflating that medical care CPI category to \$20,717 million. Instead, OOP spending in the CE survey for “Non physician services inside home” should have been mapped to its own CPI category “Care of invalids, elderly and convalescents in the

home”. Doing so, in 2020, CE OOP spending is now shown separately for these two CPI categories; “Care of invalids, elderly and convalescents in the home”, now slightly increased from \$6,607 million in 2017 to \$6,646 million in 2020, dwarfing the \$1,836 million in the 2020 BLS CE survey for “Care in convalescent or nursing home” which corresponds to the BLS CPI category of “Nursing home and adult day care services”, shown in Table 7.

One final note about the much larger OOP spending on invalids, elderly and convalescents in the home relative to spending on nursing homes and adult day care. This definitional difference underscores a real potential limitation of using BLS CPI data for nursing homes, which excludes OOP spending by actual nursing home residents.. Whether or not the nursing home spending growth rates observed over time (i.e., spending by non-residents of nursing homes on behalf of others who actually live in nursing homes) are fairly representative of the cost growth for this medical care service is a matter of conjecture. It is certainly plausible that the BLS index for “Nursing home and adult day care services” differs by a selective “clientele effect” from that of the vast majority of nursing home residents who do not have other non-resident consumers paying on their behalf. This significant definitional difference between what BLS and CMS include for nursing home services accounts for the fact that CMS OOP spending exceeds BLS by **over 2,700%, as noted above.**

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

| Item   | BLS Estimated OOP Spending, Separating All Insurance | CMS Label (color-coded for split; based only on CMS OOP spending %s) | 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  | 34,015   | PDRUG  | 46,460                     | 12,445                       | 36.6%                     |
| b. Nonprescription drugs   | 28,504   | POTC   | 77,173                     | 48,669                       | 170.7%                    |
| 2. Medical equipment and supplies  | 12,545   | PDUR, POTC   | 18,376                     | 5,832                        | 46.5%                     |
| B. Medical care services   |  |  |                            |                              |                           |
| 1. Professional services   |  |  |                            |                              |                           |
| a. Physicians' services  | 21,142   | PPHY   | 59,411                     | 38,269                       | 181.0%                    |
| b. Dental services   | 38,064   | PDNT   | 53,198                     | 15,134                       | 39.8%                     |
| c. Eyeglasses and eye care (Subtotals below from Tbl R-1, not double counted in OOP sum )                                | 18,756   |  |                            |                              |                           |
| Eyeglasses and contact lenses  | 9,727  | PDUR   | 11,144                     | 1,417                        | 14.6%                     |
| Eyecare Services (1)   | 9,029  |  | N/A                        | (9,029)                      | N/A                       |
| d. Services by other medical professionals   | 14,970   | POPC   | 25,771                     | 10,801                       | 72.2%                     |
| 2. Hospital and related services   |  |  |                            |                              |                           |
| a. Hospital services   | 21,698   | PHSP   | 32,450                     | 10,752                       | 49.6%                     |
| b. Nursing home and adult day care services  | 1,836  | PNH & POPER  | 52,040                     | 50,204                       | 2734.5%                   |
| c. Care of invalids and elderly at home  | 6,646  | PHH  | 12,621                     | 5,975                        | 89.9%                     |
| Out-of-Pocket, Excluding all Insurance Payments (  | 198,176  |  | 388,646                    | 190,470                      | 96.1%                     |
| 3. Health Insurance (for BLS, includes all consumer payments to insurers, including insurer reimbursements to providers) | 481,223  | Health Ins & 3rd party payers  | 2,969,187                  | 2,487,964                    | 517.0%                    |
| Sum  | 679,398  |  | 3,357,833                  |                              | 394.2%                    |
| Total Reported in CE Table 1300  | 679,445  |  |                            |                              |                           |
| Delta \$ / % (from R-1 CE calculation)   | (47)   | -0.007%  |                            |                              |                           |

(1) Since the BLS subcategory of eyecare services presumably includes the services of ophthalmologists, optometrists, and opticians, only unknown portions of this subtotal should be mapped either to the CMS index PPHY (physician services), or the CMS index POPC (other professional services). And because it would be speculative to assign the BLS eyecare OOP dollar amounts to either CMS index, therefore this BLS subcategory is left unmapped.

## 5. Comparative Growth Rates of CMS and BLS Indexes

Table 8 presents a comparison of compound annual growth rates for matched pairs of BLS and CMS indexes. The purpose of this comparison is to enable economists 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. In our 2019 article, only data from the earliest period of historical data that were available for each paired set of BLS-CMS indexes were used to calculate compound annual growth rates, as well as correlations between the paired indexes for the longest time period possible. In this updated article, we made two enhancements: (1) the comparisons to not only extend the longest time period for another three years to include 2021;<sup>11</sup> and (2) a shorter time period from 2009-2021 is included to see how different the more recent time period results are, vis-à-vis, the longest time periods available.

It is clear and logical that for BLS and CMS indexes that map one-to-one and that both use CPI as the price proxy, the compound annual growth rates are usually quite similar for the entire time period available (e.g., Dental Services, Other Professional Services, and Prescription Drugs, although the latter involves an important caveat, discussed previously in our 2019 TEA article. As Table 8 shows, for the shorter time period between 2009-2021, the growth rates for Prescription Drugs diverge and correlation declines markedly from those of the longer time horizon beginning in 1970. The reason for the more recent prescription drug index divergence involves a belated recognition by CMS, beginning in 2014, of prescription

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<sup>11</sup> CMS historical data technically only go through 2020 at the time of this report. However, the current CMS forecast was performed with 9 months of 2021 known data. 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 2021.

drug plan rebates negotiated with drug manufacturers and pharmacies. Because rebates 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.<sup>12</sup>

Two CMS indexes that do not map one-to-one with BLS indexes are Durable Medical Equipment (PDUR) and OTC Drugs/Other Non-Durable Medical Products. (POTC). These CMS indexes both use CPI as price proxy; but the compound annual growth rates over the longest time horizon 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). However, mapping the CMS index PDUR only with the BLS index Eyeglasses and Eyecare for the shorter period beginning only in 2009, a wider growth rate divergence and much lower correlation between them were observed

Every five years the National Health Expenditure Accounts (NHEA) undergoes a comprehensive revision that includes the incorporation of newly available source data, methodological and definitional changes, and the benchmarking of the estimates to the Economic Census which is available every five years. The 2019 NHEA (released in December of 2020) was the most recent comprehensive revision of the Accounts. For the comprehensive revision, CMS benchmarked the NHE estimate of Other Non-Durable Medical Products to the Personal Consumption Expenditure categories of non-prescription drugs and other medical products (components of the National Income and

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<sup>12</sup> As explained in our 2019 TEA article, the prescription drugs component of the CPI, especially for drugs that treat conditions like diabetes and hepatitis-C, eventually returned rebates to the third-party payer and 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.

Product Accounts maintained by the Bureau of Economic Analysis). This resulted in an upward revision to total spending for the category and a change in the scope of the goods that are included in the other non-durable medical products category (to match the definitions of the PCE categories). The prior method for estimating this category wasn't fully accounting for these products and the revised CMS method of benchmarking to the PCE is both more consistent with the source data and the types of goods that should be reflected in this category in the NHEA. Because most of the expenditures for other non-durable medical products are paid for by out-of-pocket spending, this upward revision to total other non-durable medical products expenditures had a comparable impact on the revisions to the out-of-pocket spending category.

For the other indexes that use different price proxies, PPI for CMS and CPI for BLS, the compound annual growth rates are most dissimilar, due mainly to who is paying. For these indexes, as shown in Table 5 above, the percentages of Non-OOP spending in 2020 are as follows: Hospital Care – 97.4%; Physician & Clinical Services – 92.7%; and Home Health Care – 89.8%. It's a bit more complicated to compare CMS price proxies which map to the single BLS category of "Nursing home and adult day care services. That is because this requires mapping two CMS categories: Nursing Care Facilities and Continuing Care Retirement Communities, which uses a PPI price proxy, and the much smaller "Other Personal Health Care, which uses a CPI price proxy. , The divergence in growth rates observed here mainly occurs over the period beginning in 2009. This likely is due not only to the fact that Non-OOP spending for Nursing Homes as reported by CMS accounts for 77.0% of this category's total spending, but also to the "clientele effect" previously mentioned, i.e., the fact that the BLS only collects spending data from non-resident consumers who do not reside in nursing homes but pay for others who are so institutionalized, the latter of whose own payments are thus excluded from the BLS nursing home index.

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

| NHE/CMS Label<br>Index Source | Dental Services |       | Prescription Drugs |       | Durable Medical<br>Equipment (1) |       | Home Health Care |       | Hospital Care |       | Nursing Home +<br>Other Personal<br>Health Care (2) |                | Other<br>Professional<br>Services |       | OTC Drugs/Other<br>Non-Durable<br>Medical Prod.(3) |        | Physician &<br>Clinical Services |       | Medical Services<br>(Both<br>Composites) |           |
|-------------------------------|-----------------|-------|--------------------|-------|----------------------------------|-------|------------------|-------|---------------|-------|---|----------------|-----------------------------------|-------|--|--------|----------------------------------|-------|--|-----------|
|                               | 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 &<br>POPER |                                   | POPC  |  | POTC   |                                  | PPHY  |  | PMSVC     |
| Price Proxy                   | CPI             | CPI   | CPI                | CPI   | CPI                              | CPI   | CPI              | CPI   | CPI           | CPI   | CPI   | CPI            | CPI                               | CPI   | CPI  | CPI    | CPI                              | CPI   | 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 2021              | 5.11%           | 5.11% | 4.72%              | 4.54% | 0.74%                            | 0.36% | 2.06%            | 1.38% | 5.30%         | 2.66% | 3.73%   | 3.08%          | 2.63%                             | 2.75% | -0.34%   | -0.36% | 4.96%                            | 3.69% | 5.80%                                    | 4.49%     |
| Correlation Coef.             | 100.00%         |       | 99.63%             |       | 96.65%                           |       | 96.29%           |       | 98.71%        |       | 99.74%  |                | 99.99%                            |       | 97.09%   |        | 97.41%                           |       | 98.48%                                   |           |
| 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 &<br>POPER |                                   | POPC  |  | POTC   |                                  | PPHY  |  | PMSVC     |
| Growth Calc From              | 2009            | 2009  | 2009               | 2009  | 1986                             | 1986  | 2009             | 2009  | 2009          | 2009  | 2009  | 2009           | 2009                              | 2009  | 2009   | 2009   | 2009                             | 2009  | 2009                                     | 2009      |
| Growth thru 2021              | 2.51%           | 2.51% | 2.44%              | 1.57% | 1.91%                            | 1.65% | 1.95%            | 1.37% | 4.65%         | 2.14% | 3.17%   | 2.45%          | 1.40%                             | 1.40% | -0.35%   | -0.36% | 1.99%                            | 0.92% | 3.10%                                    | 1.73%     |
| Correlation Coef.             | 100.00%         |       | 93.59%             |       | 98.86%                           |       | 97.46%           |       | 98.61%        |       | 99.50%  |                | 100.00%                           |       | 99.98%   |        | 88.97%                           |       | 99.14%                                   |           |
| Growth Calc From              |                 |       |                    |       | Eyeglass                         | PDUR  |                  |       |               |       |   |                |                                   |       |  |        |                                  |       |  |           |
| Growth thru 2021              |                 |       |                    |       | 2009                             | 2009  |                  |       |               |       |   |                |                                   |       |  |        |                                  |       |  |           |
| Correlation Coef.             |                 |       |                    |       | 0.84%                            | 0.36% |                  |       |               |       |   |                |                                   |       |  |        |                                  |       |  |           |
|                               |                 |       |                    |       | 96.13%                           |       |                  |       |               |       |   |                |                                   |       |  |        |                                  |       |  |           |

(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. First lower panel shows longer time series, mapping just Eyeglasses and Eyecare" with PDUR, the former of which began in 1986 (and accounted for about 92% of the total in 2021). It shows a higher correlation and more similar price growth rates when the BLS index is only limited to "Eyeglasses and Eyecare". However, the second lower panel shows a shorter time series, also limited to the same BLS "Eyeglasses and Eyecare" index; here, the price growth rate is much more divergent with PDUR, and thus show a lower correlation.

(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 data 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) POTC is labeled more generally within the published NHE as "Other Non-Durable Medical Products". Despite the CMS category label POTC, this index is more highly aggregated than the comparable BLS categories. Within POTC, "over the counter" or nonprescription drugs is the largest category, with the precise % unknown (92.5% is suggested by Bureau of Economic Analysis or BEA data, which are quite similar to CMS.) 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". 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 coefficients and growth rates are slightly closer when restricted only to the BLS "Nonprescription Drugs" index, although growth rates and correlations of POTC with both sets of BLS indices are quite similar over the same time period from 2009-2021.



## **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, including a modest revision from our 2019 TEA article.



**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 as well as the impact of COVID. It is also arbitrary as to what historical period average to use  |
|     | Indexes in theory 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 addition, 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 two facts: (1) About 70% of consumer spending on healthcare tracked by BLS includes health insurance, i.e., insurance premiums paid for by the consumer as deductions from employee paychecks and as well as premiums for Medicare Parts B and D; and (2) "billed charges" by hospitals and physicians are usually marked down, often substantially, and represents a potentially biased-high starting point from which growth rates in excess of what is actually paid in total leads to unrealistically high projected future payments |
|     | 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. Moreover, the inflation component can be readily separated from real price growth rates to allow users to substitute more current general inflation projections and thus update each index's nominal price growth rates projections | 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 reflect only consumer out-of-pocket spending, excluding insurance payments, which some economists might prefer.** For example, in life care plans, the prices of specific medical goods and services, as if purchased at time-zero, are projected to grow at various rates. Given that both BLS and CMS embed insurance payments to providers in their respective indexes, one must consider to what degree health care price indexes should be expected to grow, weighted by the actual payments made by each type of payer, especially by each type of insurance payer;
- **Many if not most life care plans begin with expected “billed charges”.** Especially for hospitals and physicians, such billed charges are usually marked down, often substantially. Using billed charges in life care plans represents a potentially biased-high starting point from which growth rates in excess of what is actually paid in total by all providers may lead to unrealistically high projected future life care plan payments;
- **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 the Feeley, Horan and Schap article, the CSR prohibiting any reference to medical insurance payments is no longer absolute in many jurisdictions. As of mid-2016, Feeley et al. 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 policies 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. as of 2020 spent slightly more than double per capita on health consumption among comparably wealthy countries.<sup>13</sup> Thus, economists who 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

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<sup>13</sup> The U.S. spent \$11,945 per capita on health consumption in 2020, slightly more than double (versus \$5,736) the average among other comparable wealthy countries on a purchasing power parity (PPP) basis. Peterson-KFF, *Health System Tracker*, January 21, 2022.

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.

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## Appendix

### 1. NHE Quick Reference Guide

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>

and select under Downloads “Quick Definitions for National Health Expenditure Accounts (NHEA) Categories (PDF)

### **2. National Health Expenditure price Projections, year to year % growth. March 2022 10-year projections for period 2021 through 2030.**

Note that projections for 2021 were based on ten months of actual data. Also, note that in this article, two sets of CMS price indexes are included: The same ones comprising the Personal Health Care index, PPHC; and second, a set of additional health care price indexes that involve additional expenditures to complete the full set of health care expenditures that comprise the National Health Expenditures index, PNHC. These sets are shown on separate pages to enhance readability.



## 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: [National Health Expenditure Accounts: Methodology Paper, 2020 \(cms.gov\)](https://www.cms.gov/medicare/health-care-providers/quality-inquiry/2020-national-health-expenditure-accounts-methodology-paper)

### ***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: March 2022 10-year projections for period 2021 through 2030: PPHC & components

|      | 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 | 0.209             | 0.094  | 0.108        | 0.251    | 0.140  | 0.105    | 0.123    | 0.121   | 0.134        | 0.124 | 0.221    | 0.126       | 0.168     |
| 1971 | 0.218             | 0.100  | 0.108        | 0.256    | 0.148  | 0.112    | 0.132    | 0.128   | 0.143        | 0.132 | 0.229    | 0.133       | 0.179     |
| 1972 | 0.225             | 0.104  | 0.108        | 0.256    | 0.153  | 0.118    | 0.138    | 0.134   | 0.148        | 0.136 | 0.231    | 0.138       | 0.185     |
| 1973 | 0.238             | 0.107  | 0.107        | 0.257    | 0.159  | 0.125    | 0.144    | 0.141   | 0.153        | 0.143 | 0.234    | 0.144       | 0.191     |
| 1974 | 0.262             | 0.116  | 0.110        | 0.266    | 0.174  | 0.138    | 0.158    | 0.156   | 0.166        | 0.157 | 0.244    | 0.157       | 0.208     |
| 1975 | 0.284             | 0.127  | 0.117        | 0.288    | 0.195  | 0.154    | 0.176    | 0.171   | 0.184        | 0.173 | 0.270    | 0.174       | 0.234     |
| 1976 | 0.300             | 0.135  | 0.123        | 0.305    | 0.213  | 0.168    | 0.192    | 0.184   | 0.201        | 0.189 | 0.289    | 0.189       | 0.260     |
| 1977 | 0.319             | 0.146  | 0.130        | 0.325    | 0.234  | 0.181    | 0.208    | 0.197   | 0.217        | 0.204 | 0.308    | 0.204       | 0.284     |
| 1978 | 0.341             | 0.156  | 0.140        | 0.348    | 0.254  | 0.195    | 0.224    | 0.214   | 0.234        | 0.221 | 0.330    | 0.220       | 0.308     |
| 1979 | 0.372             | 0.169  | 0.151        | 0.369    | 0.277  | 0.213    | 0.245    | 0.234   | 0.254        | 0.242 | 0.355    | 0.240       | 0.335     |
| 1980 | 0.412             | 0.189  | 0.165        | 0.399    | 0.307  | 0.240    | 0.273    | 0.257   | 0.282        | 0.268 | 0.391    | 0.267       | 0.368     |
| 1981 | 0.449             | 0.207  | 0.184        | 0.436    | 0.340  | 0.273    | 0.307    | 0.283   | 0.311        | 0.296 | 0.439    | 0.299       | 0.406     |
| 1982 | 0.474             | 0.223  | 0.206        | 0.476    | 0.380  | 0.307    | 0.339    | 0.305   | 0.337        | 0.319 | 0.487    | 0.330       | 0.441     |
| 1983 | 0.494             | 0.238  | 0.228        | 0.506    | 0.413  | 0.329    | 0.363    | 0.324   | 0.361        | 0.339 | 0.523    | 0.354       | 0.471     |
| 1984 | 0.512             | 0.258  | 0.250        | 0.529    | 0.438  | 0.357    | 0.390    | 0.340   | 0.387        | 0.357 | 0.556    | 0.380       | 0.498     |
| 1985 | 0.530             | 0.274  | 0.274        | 0.552    | 0.466  | 0.388    | 0.416    | 0.353   | 0.411        | 0.372 | 0.585    | 0.406       | 0.520     |
| 1986 | 0.542             | 0.289  | 0.297        | 0.579    | 0.501  | 0.400    | 0.434    | 0.365   | 0.437        | 0.388 | 0.614    | 0.424       | 0.550     |
| 1987 | 0.559             | 0.309  | 0.321        | 0.603    | 0.534  | 0.412    | 0.452    | 0.377   | 0.466        | 0.405 | 0.646    | 0.443       | 0.581     |
| 1988 | 0.580             | 0.329  | 0.347        | 0.628    | 0.565  | 0.435    | 0.477    | 0.394   | 0.493        | 0.427 | 0.682    | 0.468       | 0.612     |
| 1989 | 0.606             | 0.350  | 0.377        | 0.657    | 0.596  | 0.465    | 0.507    | 0.417   | 0.520        | 0.453 | 0.724    | 0.498       | 0.644     |
| 1990 | 0.632             | 0.373  | 0.414        | 0.689    | 0.627  | 0.495    | 0.536    | 0.440   | 0.547        | 0.479 | 0.761    | 0.527       | 0.674     |
| 1991 | 0.653             | 0.401  | 0.455        | 0.720    | 0.660  | 0.518    | 0.560    | 0.460   | 0.577        | 0.503 | 0.795    | 0.553       | 0.698     |
| 1992 | 0.671             | 0.428  | 0.490        | 0.750    | 0.687  | 0.541    | 0.583    | 0.477   | 0.600        | 0.524 | 0.825    | 0.577       | 0.722     |
| 1993 | 0.688             | 0.451  | 0.508        | 0.772    | 0.709  | 0.565    | 0.605    | 0.492   | 0.619        | 0.544 | 0.853    | 0.599       | 0.740     |
| 1994 | 0.702             | 0.472  | 0.526        | 0.790    | 0.737  | 0.586    | 0.622    | 0.505   | 0.643        | 0.563 | 0.866    | 0.616       | 0.749     |
| 1995 | 0.717             | 0.495  | 0.536        | 0.818    | 0.750  | 0.607    | 0.639    | 0.524   | 0.655        | 0.583 | 0.871    | 0.632       | 0.756     |
| 1996 | 0.732             | 0.519  | 0.554        | 0.831    | 0.765  | 0.621    | 0.652    | 0.556   | 0.668        | 0.608 | 0.888    | 0.646       | 0.754     |
| 1997 | 0.745             | 0.543  | 0.568        | 0.844    | 0.792  | 0.627    | 0.663    | 0.579   | 0.691        | 0.629 | 0.903    | 0.658       | 0.762     |
| 1998 | 0.751             | 0.566  | 0.590        | 0.860    | 0.814  | 0.631    | 0.675    | 0.604   | 0.708        | 0.650 | 0.915    | 0.672       | 0.778     |
| 1999 | 0.762             | 0.592  | 0.623        | 0.869    | 0.821  | 0.642    | 0.690    | 0.627   | 0.723        | 0.668 | 0.918    | 0.689       | 0.794     |
| 2000 | 0.781             | 0.619  | 0.651        | 0.884    | 0.851  | 0.659    | 0.709    | 0.662   | 0.737        | 0.697 | 0.923    | 0.709       | 0.807     |
| 2001 | 0.797             | 0.644  | 0.686        | 0.899    | 0.874  | 0.682    | 0.734    | 0.704   | 0.762        | 0.728 | 0.933    | 0.735       | 0.831     |
| 2002 | 0.807             | 0.673  | 0.722        | 0.900    | 0.894  | 0.713    | 0.756    | 0.730   | 0.782        | 0.749 | 0.933    | 0.757       | 0.831     |
| 2003 | 0.824             | 0.701  | 0.759        | 0.902    | 0.897  | 0.744    | 0.780    | 0.755   | 0.806        | 0.766 | 0.945    | 0.782       | 0.845     |
| 2004 | 0.844             | 0.735  | 0.784        | 0.916    | 0.918  | 0.780    | 0.809    | 0.786   | 0.828        | 0.793 | 0.944    | 0.810       | 0.862     |
| 2005 | 0.869             | 0.776  | 0.812        | 0.930    | 0.928  | 0.810    | 0.835    | 0.815   | 0.851        | 0.815 | 0.938    | 0.835       | 0.879     |
| 2006 | 0.893             | 0.817  | 0.840        | 0.951    | 0.933  | 0.845    | 0.860    | 0.839   | 0.875        | 0.834 | 0.957    | 0.860       | 0.887     |
| 2007 | 0.916             | 0.859  | 0.852        | 0.966    | 0.950  | 0.874    | 0.892    | 0.879   | 0.899        | 0.859 | 0.973    | 0.889       | 0.922     |
| 2008 | 0.943             | 0.903  | 0.874        | 0.974    | 0.966  | 0.901    | 0.915    | 0.914   | 0.936        | 0.895 | 0.984    | 0.912       | 0.932     |
| 2009 | 0.941             | 0.930  | 0.903        | 0.985    | 0.981  | 0.928    | 0.940    | 0.944   | 0.955        | 0.918 | 1.007    | 0.937       | 0.953     |
| 2010 | 0.957             | 0.955  | 0.942        | 0.984    | 0.992  | 0.955    | 0.964    | 0.963   | 0.976        | 0.949 | 1.006    | 0.962       | 0.975     |
| 2011 | 0.982             | 0.977  | 0.981        | 0.990    | 0.992  | 0.976    | 0.982    | 0.986   | 0.990        | 0.978 | 0.993    | 0.982       | 0.989     |
| 2012 | 1.000             | 1.000  | 1.000        | 1.000    | 1.000  | 1.000    | 1.000    | 1.000   | 1.000        | 1.000 | 1.000    | 1.000       | 1.000     |
| 2013 | 1.014             | 1.034  | 1.023        | 1.005    | 0.999  | 1.022    | 1.014    | 1.008   | 1.017        | 1.022 | 1.000    | 1.015       | 1.001     |
| 2014 | 1.029             | 1.056  | 1.059        | 1.011    | 1.008  | 1.035    | 1.025    | 1.019   | 1.031        | 1.046 | 0.992    | 1.029       | 1.006     |
| 2015 | 1.031             | 1.083  | 1.070        | 1.008    | 1.019  | 1.045    | 1.030    | 1.040   | 1.039        | 1.067 | 0.984    | 1.035       | 0.995     |
| 2016 | 1.041             | 1.114  | 1.086        | 1.014    | 1.035  | 1.057    | 1.041    | 1.068   | 1.052        | 1.097 | 0.973    | 1.047       | 0.997     |
| 2017 | 1.061             | 1.132  | 1.097        | 1.017    | 1.044  | 1.075    | 1.055    | 1.095   | 1.077        | 1.111 | 0.981    | 1.061       | 1.002     |
| 2018 | 1.083             | 1.163  | 1.086        | 1.026    | 1.070  | 1.101    | 1.075    | 1.132   | 1.081        | 1.129 | 0.976    | 1.076       | 1.009     |
| 2019 | 1.099             | 1.189  | 1.082        | 1.041    | 1.100  | 1.123    | 1.094    | 1.174   | 1.089        | 1.152 | 0.979    | 1.092       | 1.017     |
| 2020 | 1.112             | 1.224  | 1.081        | 1.032    | 1.133  | 1.159    | 1.122    | 1.221   | 1.102        | 1.188 | 0.971    | 1.116       | 1.029     |
| 2021 | 1.157             | 1.252  | 1.089        | 1.028    | 1.155  | 1.196    | 1.155    | 1.241   | 1.129        | 1.248 | 0.964    | 1.145       | 1.064     |
| 2022 | 1.200             | 1.304  | 1.105        | 1.047    | 1.195  | 1.249    | 1.202    | 1.299   | 1.160        | 1.315 | 0.972    | 1.187       | 1.093     |
| 2023 | 1.231             | 1.352  | 1.130        | 1.065    | 1.230  | 1.289    | 1.236    | 1.341   | 1.189        | 1.362 | 0.987    | 1.220       | 1.116     |
| 2024 | 1.256             | 1.401  | 1.156        | 1.080    | 1.258  | 1.326    | 1.268    | 1.380   | 1.217        | 1.405 | 1.005    | 1.251       | 1.138     |
| 2025 | 1.282             | 1.454  | 1.183        | 1.097    | 1.291  | 1.363    | 1.302    | 1.421   | 1.249        | 1.452 | 1.026    | 1.284       | 1.163     |
| 2026 | 1.308             | 1.508  | 1.213        | 1.114    | 1.323  | 1.402    | 1.336    | 1.462   | 1.281        | 1.498 | 1.049    | 1.318       | 1.188     |
| 2027 | 1.335             | 1.564  | 1.244        | 1.133    | 1.358  | 1.442    | 1.372    | 1.504   | 1.314        | 1.547 | 1.073    | 1.354       | 1.216     |
| 2028 | 1.362             | 1.623  | 1.277        | 1.151    | 1.393  | 1.483    | 1.411    | 1.546   | 1.349        | 1.599 | 1.099    | 1.391       | 1.243     |
| 2029 | 1.390             | 1.685  | 1.311        | 1.172    | 1.429  | 1.526    | 1.450    | 1.590   | 1.385        | 1.655 | 1.125    | 1.429       | 1.273     |
| 2030 | 1.419             | 1.750  | 1.347        | 1.192    | 1.466  | 1.570    | 1.492    | 1.634   | 1.422        | 1.714 | 1.153    | 1.468       | 1.302     |

**National Health Expenditure price projections, year-to year % price growth:  
 March 2022 10-year projections for period 2021 through 2030:  
 Additional components**

|      | Government    | Net   | Government |          |            |           | National            |  |
|------|---------------|-------|------------|----------|------------|-----------|---------------------|--|
|      | Public Health | Cost  | Admin      | Research | Structures | Equipment | Health Expenditures |  |
|      | PGPH          | PNCST | PGADM      | PRES     | PSTR       | PEQP      | PNHE                |  |
| 2000 | 0.000         | 0.000 | 0.000      | 0.000    | 0.730      | 1.340     | 0.000               |  |
| 2001 | 0.000         | 0.000 | 0.000      | 0.000    | 0.761      | 1.323     | 0.000               |  |
| 2002 | 0.000         | 0.000 | 0.000      | 0.000    | 0.775      | 1.306     | 0.000               |  |
| 2003 | 0.742         | 0.762 | 0.790      | 0.723    | 0.799      | 1.272     | 0.788               |  |
| 2004 | 0.772         | 0.779 | 0.819      | 0.751    | 0.847      | 1.228     | 0.815               |  |
| 2005 | 0.809         | 0.842 | 0.847      | 0.781    | 0.917      | 1.203     | 0.843               |  |
| 2006 | 0.843         | 0.883 | 0.873      | 0.813    | 0.996      | 1.167     | 0.869               |  |
| 2007 | 0.877         | 0.916 | 0.901      | 0.849    | 1.043      | 1.149     | 0.898               |  |
| 2008 | 0.922         | 0.852 | 0.934      | 0.883    | 1.066      | 1.130     | 0.916               |  |
| 2009 | 0.926         | 0.862 | 0.944      | 0.920    | 1.025      | 1.137     | 0.938               |  |
| 2010 | 0.948         | 0.935 | 0.960      | 0.948    | 0.979      | 1.022     | 0.961               |  |
| 2011 | 0.981         | 1.006 | 0.984      | 0.976    | 0.988      | 1.014     | 0.984               |  |
| 2012 | 1.000         | 1.000 | 1.000      | 1.000    | 1.000      | 1.000     | 1.000               |  |
| 2013 | 1.033         | 0.985 | 1.018      | 1.019    | 1.022      | 0.978     | 1.013               |  |
| 2014 | 1.056         | 1.050 | 1.037      | 1.041    | 1.054      | 0.960     | 1.030               |  |
| 2015 | 1.056         | 1.090 | 1.053      | 1.063    | 1.063      | 0.955     | 1.038               |  |
| 2016 | 1.057         | 1.131 | 1.073      | 1.087    | 1.070      | 0.949     | 1.052               |  |
| 2017 | 1.085         | 1.111 | 1.099      | 1.115    | 1.086      | 0.940     | 1.063               |  |
| 2018 | 1.128         | 1.246 | 1.126      | 1.142    | 1.131      | 0.927     | 1.087               |  |
| 2019 | 1.145         | 1.183 | 1.152      | 1.164    | 1.182      | 0.919     | 1.099               |  |
| 2020 | 1.165         | 1.403 | 1.177      | 1.184    | 1.210      | 0.921     | 1.133               |  |
| 2021 | 1.226         | 1.487 | 1.218      | 1.227    | 1.297      | 0.952     | 1.163               |  |
| 2022 | 1.289         | 1.485 | 1.261      | 1.270    | 1.384      | 0.987     | 1.205               |  |
| 2023 | 1.332         | 1.545 | 1.293      | 1.298    | 1.398      | 0.993     | 1.238               |  |
| 2024 | 1.376         | 1.614 | 1.328      | 1.331    | 1.416      | 1.013     | 1.270               |  |
| 2025 | 1.423         | 1.681 | 1.364      | 1.363    | 1.453      | 1.029     | 1.304               |  |
| 2026 | 1.473         | 1.746 | 1.402      | 1.396    | 1.493      | 1.047     | 1.338               |  |
| 2027 | 1.524         | 1.808 | 1.442      | 1.430    | 1.535      | 1.065     | 1.374               |  |
| 2028 | 1.577         | 1.872 | 1.482      | 1.465    | 1.579      | 1.081     | 1.412               |  |
| 2029 | 1.632         | 1.940 | 1.523      | 1.502    | 1.625      | 1.097     | 1.450               |  |
| 2030 | 1.689         | 2.010 | 1.566      | 1.540    | 1.671      | 1.115     | 1.490               |  |