Getzen Model of Long-Run Medical Cost Trends
Update for 2022 - 2030+: *Forecasting in the Time of COVID*

COVID has washed over healthcare like a tsunami—things have been tossed in all directions. According to Medicare actuaries, trends have been turned upside down in 2021, but will reverse back in 2023 as medical costs rebound.[1] The CBO changed their expectation of current growth for the year 2021 from +3.3% to +6.7% between March and July, and cut expected income growth for 2023 to 2026—an extraordinarily large revision to have been made in such a short time.[2,3] In such a whipsaw economic environment, year-to-year percentage increases are almost impossible to predict and kind of misleading. However, the Getzen Model is for the long term, not current turmoil. It is based on 60+ years of observation showing that economic factors, not disease incidence, are responsible for most of the disruption and variance in aggregate medical spending trends.[4,5] Hence, as in last year's update, the 2022 model spreadsheet puts placeholder question marks "???" for 2022-2024 as the model continues to project medium and long run trends for years 2026 and following similar to projections made over the last few years, albeit with much greater short-term uncertainty and slightly slower growth. This assumes that after 5 years COVID-19 is likely to be just one more virus responsible for some of the thousands of regularly occurring seasonal deaths—no longer unprecedented or surprising.

It is more prudent to base projections on long run trends for a period after the storm, extrapolating from 2026 forward, leaving the intervening turbulence (years 2022 -2025) mostly unspecified. Almost all analysts fully expect major changes in health financing to occur. We just do not know what they will be and when they will get implemented. This is one of those periods when long run future growth rates are more bounded and predictable than what will happen in the near term. The project oversight group (POG) for the Getzen Model intends to reconvene in early 2022 to consider a revised update and parameter modifications as new information becomes available. The POG is also considering a report about the possible configuration, constraints, and timing of the next transformation in health care financing, but such exploratory work must always rely more on plausible assumptions and speculation than precisely quantified trends.

Conceptually as well as in accounting terms, health spending depends on just two factors: i) how much is available to spend and ii) what fraction of each dollar gets allocated for medical care rather than other types of consumption. The first is expressed in the model as inflation plus real growth per capita, the second as the technology factor, "excess medical cost growth." The changes in this year's spreadsheet are relatively minor with the baseline assumptions for income growth and technology growth both being reduced -0.1%. These changes reduce expected growth over the next decade by about 2%. Although the reduction in year-to-year projected growth rates is small, the cumulative effects over the long run are significant. In addition, the POG expects more aggressive efforts to bend the cost curve, a consideration expressed in the spreadsheet by reducing the "share resistance limit" baseline assumption from .250 to .200, indicating that pushback on further cost increases will come sooner and more forcefully. The expected health share 10 years into the future has been reduced from .200 to .190. The baseline spreadsheet changes still allow for substantial growth but lowers the long run projection of health share of GDP after 50 years from .292 to .249. Several observations lend support to a reduction in future growth rates: employment in the health sector has been below trend for a number of years now; federal budget deficits are higher; and the ravages of COVID have reinforced a suspicion that a purely technological approach is bringing ever smaller marginal gains at ever greater cost. It is possible that the latter concern may lead to a rebalancing of investments toward public health, social determinants, and primary care rather than more support of expensive innovations in diagnostics, pharmaceuticals, or interventional therapeutics.

Economic and medical conditions are apt to be highly erratic over the next two or three years, with annual growth rates being almost unpredictable although an outer limit on volatility can still be perceived. Conditions are likely to stabilize thereafter and be in line with or close to long run trends. A baseline assumption for this model is that real wages and incomes five years from now in 2026 will be similar to those projected last year. For years 2027+ the expected average increase is expected to be slightly lower than over the past fifty years. Nominal wages and prices (i.e., without adjustment for inflation) are less predictable. The POG suspects that CPI inflation is more likely to move higher than lower, but has left the base rate unhanged for now. The core Getzen Model is neutral with respect to inflation, but real world contracts are affected by this added volatility. Hence it is better to consider

benefits and premiums as a percentage of compensation rather than absolute dollar amounts.

The Getzen Model is a long-run model designed to project medical cost levels and trends 10 or more years into the future on a national basis. All short-run or local employee group trends will eventually converge toward that long-run national trend, but in the interim may deviate widely. It is up to actuaries to use their expertise to bring in local and group factors such as age-gender demographics, group experience, plan type, benefit changes, disease prevalence, specialty drug expenses, etc. The general national trend is just one factor to be considered, and may be of relatively minor importance on actuarial projections in the short or medium term for many specific groups or localities. The 2022 version of the Getzen projects the level of spending for 2031 and growth trends for the following years. A simple linear extrapolation is used estimate growth back to the current situation, not to make year-to year forecasts for the next nine years—nor for trends in a specific locality or employee or retiree group.

Forecasting in the time of COVID

COVID has upended costs and premiums in 2021 and will continue to do so for the next several years, and may well become endemic in the USA similar to influenza. However, the expectation of the POG is that after a decade COVID will be just one of many medical conditions contributing to overall costs rather than an aberrant outlier. Like HIV and organ transplantation, COVID will contribute to the general trend as one of many conditions requiring medical treatment. However, this assumption that COVID will not materially disrupt the long-run trend after 10 years may not be correct, and if so the effects would more likely reduce rather than raise growth. To the extent that COVID does affect future excess medical cost growth trends it will be because it has it has shifted long-run macroeconomic growth trends or because it changed the current structure of the U.S. health system by shifting resources toward prevention and social determinants of health and away from medical treatments.

Notes on LR Model Input Parameters

The "Getzen Model" is a set of linked formulas to facilitate projections of average medical care cost increases over the long run. The formulas are embedded in a spreadsheet available on the SOA website. A "baseline" is presented on the "output" page of the spreadsheet that provides the consensus estimate of an expert project oversight group convened by the SOA. Actuaries should be aware that rates of increases for specific plans may often be above or below, or more variable than, the long-run average national rate of increase in medical costs which is the primary forecast target of the Getzen Model and should be prepared to document and justify conditions or assumptions that deviate from the baseline trend projections. The model has three major sections:

> Years 1 - 4: short-term annual % increases (user modifiable)
> Years 5 - 9: linear transition.
> Years 10+: long-run forecasts (per capita income+ inflation + X%)

A formula is used to reduce the estimated rate of cost increase once the health share of GDP exceeds a **resistance point**. A **year limit** specifies when further growth in medical costs is limited to the rate of increase in per capita income. This stabilizes the model and keeps unbounded growth from creating contradictions. Further explanation of model details, development, historical trends, sensitivity analysis and uncertainty are provided in the **Technical Manual** on the SOA website for actuaries and other users to consult.

Inflation / CPI: **2.5%** *(range 1.5 – 4.5).* 30-year average 1990-2020 of 2.0% with standard deviation of ±0.8% for deflator and 2.5% ±1.2% for CPI; five-year moving average ranges from 1.5% to 3.5%. CBO projects 2.1% for GDP deflator and 2.4% for CPI 2062-2031 in their July 2021 *Update* (Table 2, page 4). The March 2021 *Long-Term Budget Outlook* projects 2.0% and 2.2% respectively for 2032-2051 (Table A-2, page 34). The 2021 Medicare Trustees Report projects CPI of 2.4% (range of 1.8% to 3.0%) for 2045-2095 (Table II.C1 page 15, which is the same as their 2020 assumptions).[1] September 9 30-year TBond (1.92%) - TIPS (-0.36%) implied inflation rate is 2.2%. Inflation is volatile and can change rapidly, confounding expectations. However, inflation is neutral over the long run and thus has no effect on the health share of GDP or annual percentage increases in real spending in this model.

Real Wages / per capita GDP: **1.4%** *(range 0.0 - 3.0).* 30-year average 1990-2020 of 1.3% with standard deviation of ±1.5%; smoothed moving average range -0.3% to 3.7%. CBO July 2021 *Update* projection is 1.6% for 2023-2030 (Table 2, page 4), and the March 2021 *Long Term Outlook* projection is 0.85% % for 2032-2051 (Table A-2, page 34). 2021 Medicare Trustees Report projects scenarios from 0.5% to 1.8% with and average long run 2045-2095 estimate of 1.15% (Table II.C.1, page 15). There is considerable controversy as to how much economic growth has or has not slowed since 2000, and whether or not it will be lower for the next two decades, with experts expressing a variety of opinions.

Technology/excess cost growth: **+1.0%** *(range 0.5 – 2.1).* 30-year smoothed average 1989-2019 of +1.5% with standard deviation of ±1.2% and range of -0.4% to 4.2%, trending downward and averaging 0.5% over the last ten years. CMS OACT 2020 excess growth

projection was 1.1% for 2018-2028 (Table 1).[6] Medicare Trustee Report projects -1.8% for 2021, -0.3% for 2022, then rising to +1.0% in 2023 +1.3% in 2025, drifting down to +1.2% in 2030 and then falling from +1.0% to 0.5% over the 2031-2095 span (Page 165 and Table V.B5, page 197, see also CMS memorandum "Long Term Projection Assumptions for Medicare and Aggregate National Health Expenditures, April 22 2020, page 24). [7] 2019 CBO Long-Term Budget Outlook projects excess cost growth range of 1.0% ±0.6% for 2021-2051 (page 22). Projected growth due to technology and related factors is the most crucial element of the model. Excess growth, not the level or nominal rate of spending growth, is the factor creating fiscal pressure on employers and government.

Health Share of GDP in 2030: **.190** *(range .175 to .235).* The expected 2031 share has been reduced relative to last year's estimate, and it is below the old 2020 CMS OACT projection of .197.[6] The main impact of this parameter comes from its interaction with the share resistance limit. If the Share Resistance Point is set lower than the expected health share of GDP in 2031 then the impact of the technology factor (excess growth rate) is reduced and the projected trend is lower than the baseline long-run annual growth rate of 5.0% (cell H28)

Share Resistance Point: **.200** *(range .150 to .300).* This is the share of GDP above which additional health spending is projected to meet increasing resistance. Actuaries expecting greater budgetary resistance to medical cost increases can set this parameter as low as .150, which has the effect of bending the cost curve immediately and more strongly, so that even in the long run medical costs after 50 years are reduced from the baseline of .249 relative to GDP and wages down to .220. It is possible that the United States economy has already reached the resistance point where share resistance is already limiting health care costs. The POG is considering studying the possible impact of share resistance on short-term trend, the excess medical cost growth rate (technology factor) and the resistance point in future releases. The POG provides more detail on how alternative assumptions would affect projected growth rates in the *Technical Manual*.

Year Limit: **2075** *(range 2040 to 2098).* This parameter sets the year in which spending is projected to match the rate of increase in wages so that the health share of GDP stays constant.

Annual Premium Increases *have often exceeded the growth in medical costs per capita by +1% or more for extended periods, although in the long run the ratio of costs/premiums will stabilize so that these growth rates converge, and some estimate that the ACA expansions and other increases in government spending may allow for private health insurance premiums to rise slower than total National Health Expenditures.*

Short-term rates for 2022 – 2025 **≈ ?? to 5.2%** *(range 4% – 8%*).* The 2021 CBO projections for GDP and inflation were based on data from early in that year and have already been upended by rapidly moving trends. The CMS Office of the actuary has not released a projection since April 2020, and those projections were made from 2019 data before COVID became a known factor. For these and other reasons mentioned above, a series of

question-marks "???" are shown for 2022 - 2024 medical cost growth rates. The *5.2%* for 2025 is more of a placeholder consistent with long-run trends rather than a forecast of a specific annual rate. Note that in our model the short-term growth rate inputs do not affect the rates projected for 2031 and beyond. Long-run growth projections are determined solely by the inputs of long-run inflation, wage and technology factors, 2031 health share of GDP, resistance level and ultimate year limit.

*Short-term rates for specific groups may deviate substantially from the average national medical cost increases projected in this model due to plan designs (such as Rx only or Medicare Advantage), known rate increases at the time the valuation is performed, changes in state or federal premium taxes and fees or other factors. Significant changes to provider payment methods due to legislative or regulatory actions are apt to create perturbations. Actuaries should make use of such information and could justify expected short-term rates outside of the suggested ranges in some cases.

1. Medicare Trustees, *2021 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds.* Washington, D.C., August 31, 2021.
2. CBO. *The 2021 Long-Term Budget Outlook.* March 2021USGPO, Washington, DC.
3. CBO. *An Update to the Economic Outlook, 2020-2030*. Dated July 2020, published 02 September 2020.
4. Getzen, Thomas E. (2019). The Growth of Health Spending in the USA from 1776 to 2026. *Oxford Research Encyclopedia: Economics and Finance*. https://oxfordre.com/economics/.
5. The revised Model with an updated *Technical Manual and Documentation* is available on the SOA website under "Research Projects – Health."
6. CMS Office of the Actuary. *National Health Expenditure Projections 2019-2028.* Health Affairs, 39(4): April 2020 (see Table 1: Selected Economic Indicators, Levels and Annual Percent Change: Calendar Years 2011-2027). Online at cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected *{note: The CMS Office of the Actuary has not released a projection since April 2020 and plans to provide the next one in early 2022, skipping the usual 2021 release}*.
7. CMS Office of the Actuary. "Long Term Projection Assumptions for Medicare and Aggregate National Health Expenditures." April 22 2020. https://www.cms.gov/files/document/long-term-projection-assumptions-medicare-and-aggregate-national-health-expenditures.pdf.