What is the best prescription for the US health care system?

Part II: Does the US consume more services compared to peer nations?

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Introduction

In Part I of this series, we introduced the following framework to define and analyze national health expenditure (NHE), further decompose US health care expenditure and explore the potential drivers of the spend dilemma.

NHE = Price × Volume

Price = Cost + Profits

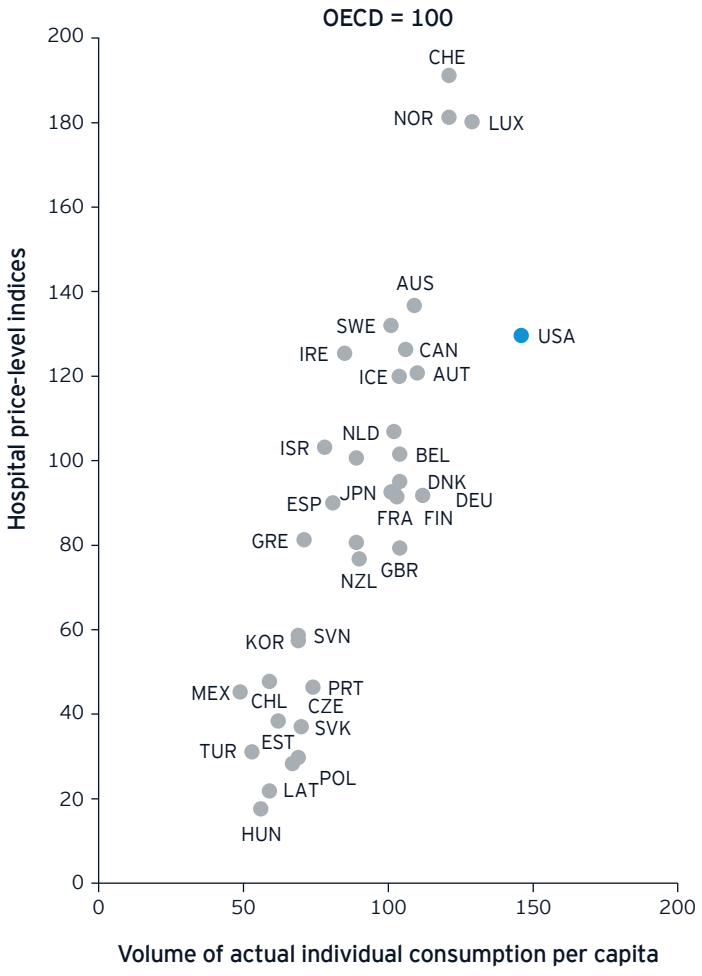
Total profits = Average profits earned across industries + Excess profits (if any) earned over average returns

NHE = [Cost per capita + Average profits earned across industries + Excess profits (if any) earned over average returns] × Volume

The first paper in our US health care series examined the role industry profits play in driving high NHE. Our analysis indicated that there may be slightly above-average returns for major health care incumbent corporations as explained by high R&D risk and patent lifetimes. Our conclusion was that, despite popular rhetoric, simply eliminating excess profits would not materially reduce US health care spending. In this section, we examine the impact that the high-volume consumption of health care services in the US has on the NHE overall.

A common criticism of the US health care system is that US residents consume more services than residents in peer countries in the Organisation for Economic Co-operation and Development (OECD). Research from the OECD comparing hospital prices and volume of services[1] has shown that, when measured against other OECD countries, the US records one of the highest hospital price indices and leads the group with the highest consumption.[2] Based on the position of the US relative to other OECD countries in Figure 1 (see page 2), we hypothesize that high consumption, or volume, is a leading contributor to the US's high NHE.

Figure 1: Comparison of price levels for hospital services and per capita actual individual consumption[3]



The structure of the US health care sector is largely a dual system for payment — private insurance for most of the under-65 population and the government-funded Medicare system for the 65-and-over population. As a result, we bifurcated the analysis of this paper to reflect the two segments. While there is overlap in the federal- and state-funded medical coverage with the under-65 population, primarily in the form of Medicaid, we found significant complexities in parsing the data at that level, so we will explore the impact of Medicaid patients later in this paper and begin by segmenting patients by age. To understand the consumption by age demographic, we first compared health care utilization[4] across four age groups: pediatric patients (under 18), 18 to 44, 45 to 64 and elderly population (65 and over).

We observed (Figure 2) that the 44-and-under age group is nearly 60% of the population but accounts for just over 30% of the spend and, conversely, the 65-and-over population is the smallest portion of the population but contributes to the highest proportion of spend (17% of the 65-and-over population driving 34% of NHE). On a per capita basis (Figure 3), when compared with the 18 to 44 group, NHE more than doubles in the 45 to 64 segment — accounting for 25% of the population but approximately 34% of NHE — and is more than three times as much in the 65-and-over segment.

Figure 2: Comparison of US population and NHE spend by age group[5]

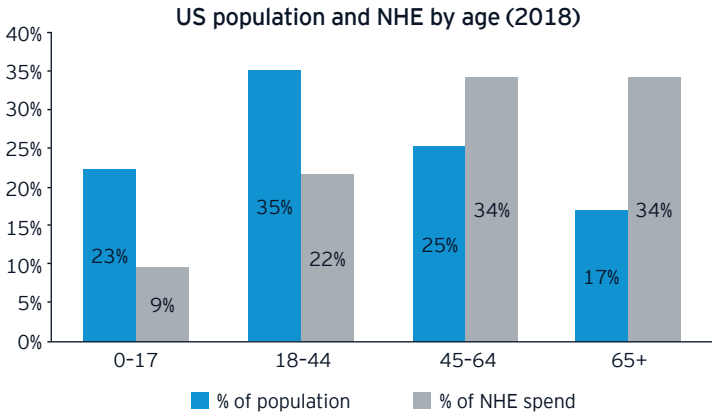
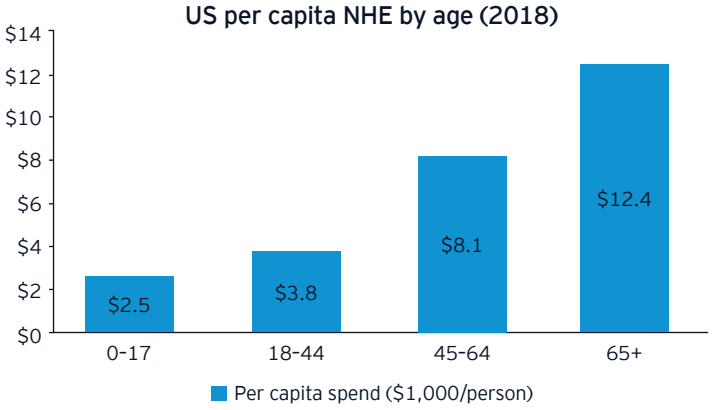
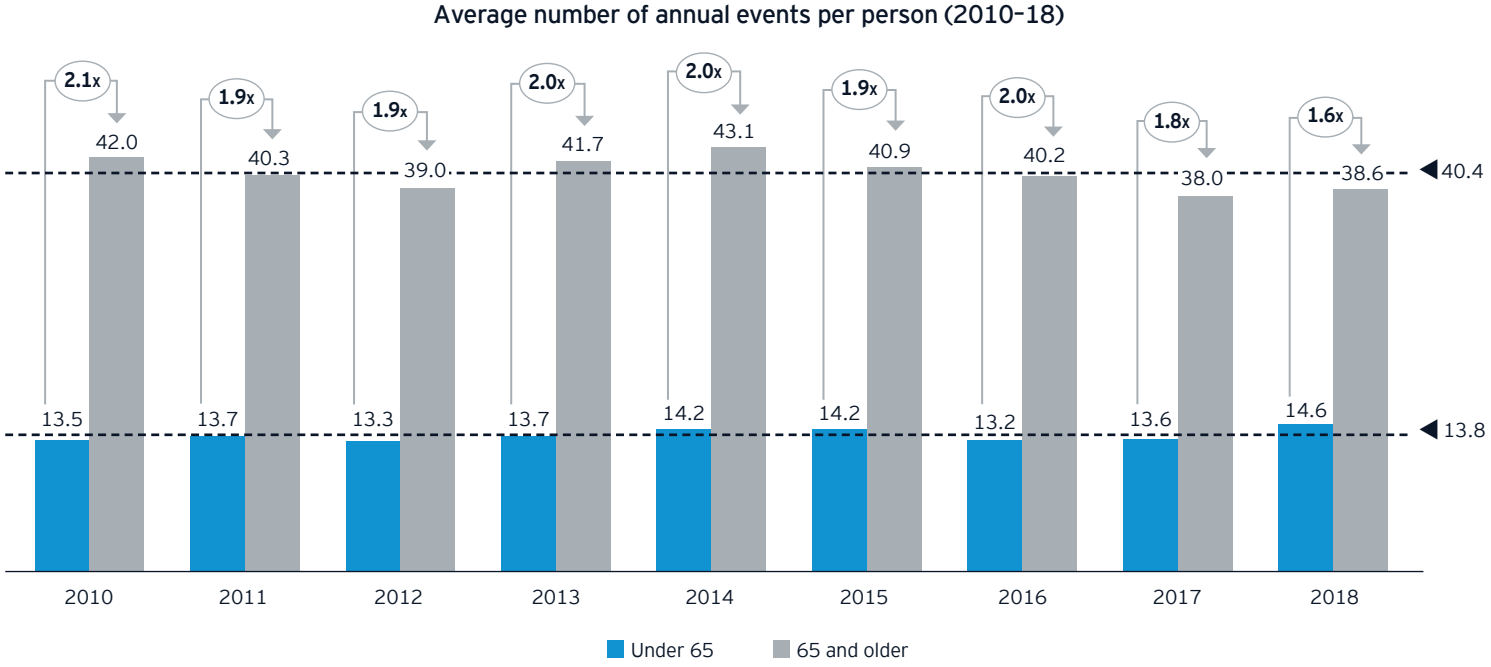


Figure 3: Comparison of US per capita spend by age group[6]



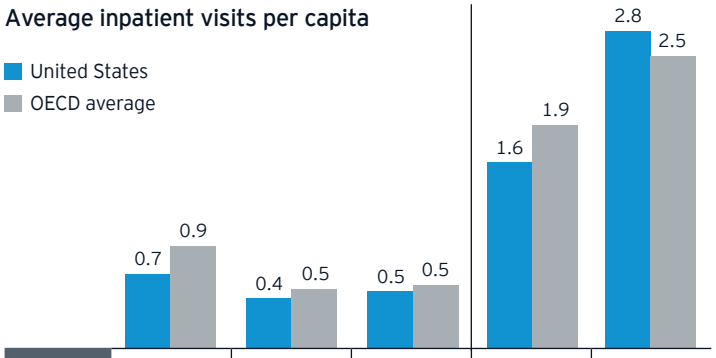
Analysis of claims data from 2010 to 2018 further corroborates this; compared to the under-65 population, the 65-and-over population consumed almost three times more health care services[7] on average over the period from 2010 to 2018 (Figure 4).

Figure 4: Health care events per capita under 65, and 65 and over (2010–18)[8,9]



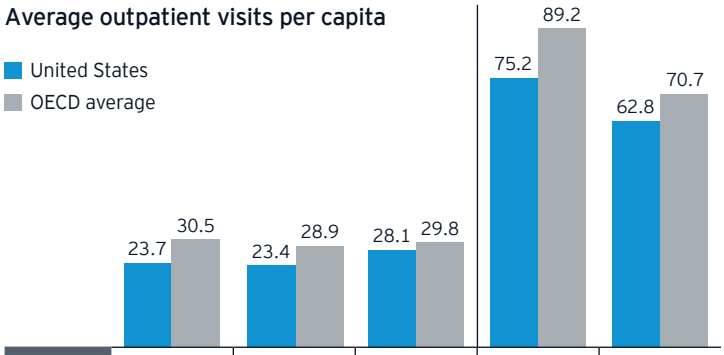
Given the limited data available on the consumption of health care procedures in the 65-and-over population across the OECD countries, a direct comparison is not possible. Based on the available data set comparing health care utilization, we observed that the US 65-and-over group utilizes approximately 10% more inpatient visits, or formal admissions to a hospital, per capita compared to its peers (Figure 5) but is increasingly falling relative to other US age groups and OECD peers. However, outpatient visits over the same period are shown to be increasing at a rate faster than any other group within the US or abroad and accounts for a larger volume of visits, resulting in a net increase for total inpatient and outpatient services for the US 65-and-over population.

Figure 5: Comparison of inpatient visits per capita by age in US vs. other OECD countries (2006–16)



2006–16 CAGR	0–19	20–44	45–64	Under 65	Over 65
US	-1.4%	-0.8%	-0.5%	-1.0%	-2.5%
OECD average	0.3%	0.3%	–	0.2%	-0.8%

Figure 6: Comparison of outpatient visits per capita by age in US vs. other OECD countries (2006–16)[10]



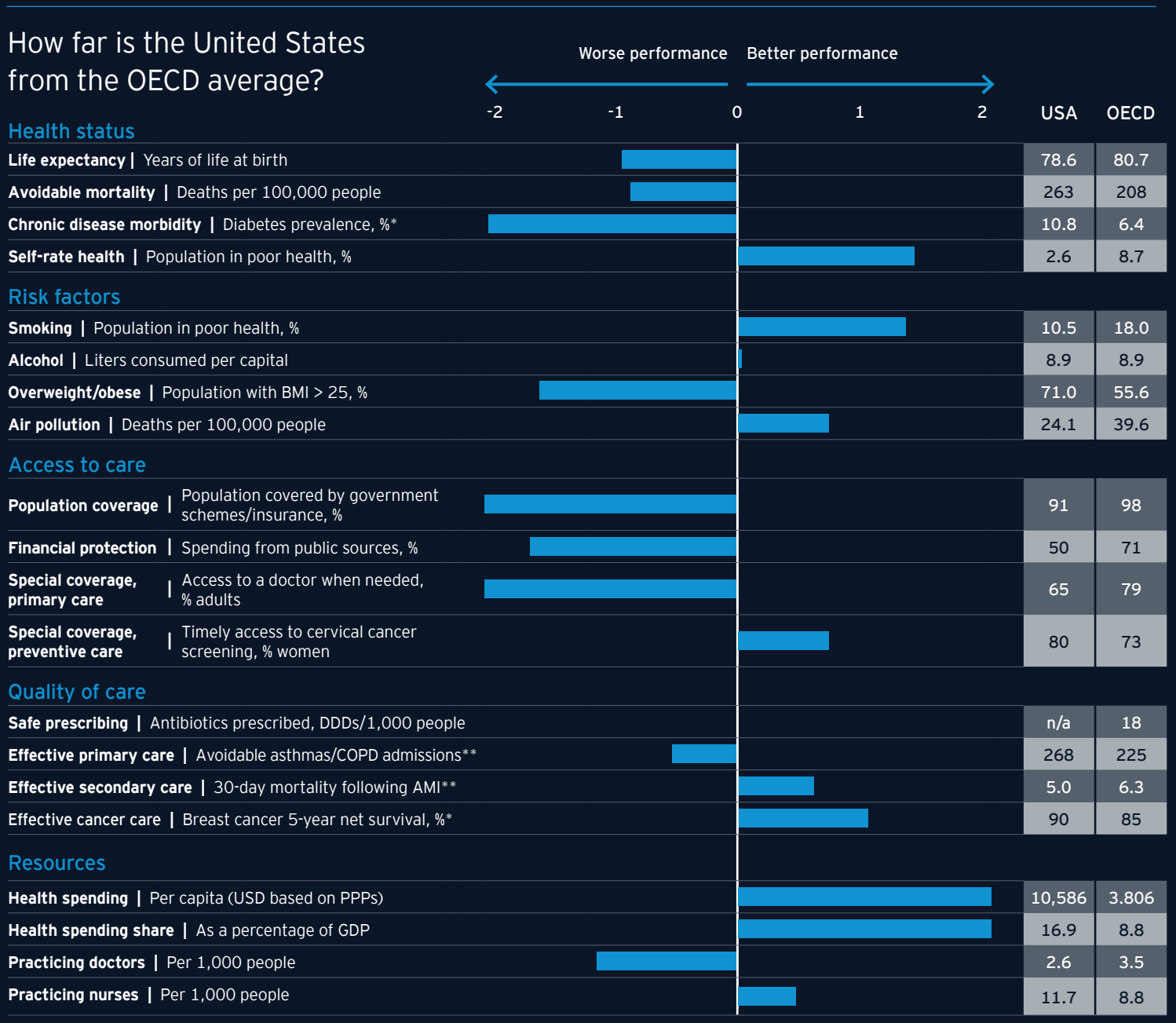
2006–16 CAGR	0–19	20–44	45–64	Under 65	Over 65
US	0.2%	0.8%	0.3%	1.4%	1.0%
OECD average	0.6%	0.6%	0.5%	0.6%	0.3%

In the US health care system, the 65-and-over population qualifies for coverage from the federal government under the Medicare program. Thus, any solutions to address consumption within this population are typically focused on how Medicare services are administered rather than a bottom-up perspective viewing the patient components driving the necessity of health care interventions. Additionally, due to the expected correlation between aging and increased health complications, it makes sense that older age groups would consume a higher volume of care; however, the higher consumption in the US 65-and-over population is not leading to measurable improvements on quality metrics, such as life expectancy, quality-adjusted life years (QALY) and avoidable mortality, relative to other OECD countries.

An additional complexity in the under-65 segment is the population of individuals covered by Medicaid, a jointly administered federal and state program that provides health care coverage for persons with limited income and resources, but is not limited by age and overlaps with Medicare for those who qualify. The large diversity in age, race and underlying health conditions of patients covered by Medicaid creates significant difficulties for determining the drivers of consumption in this category, but as a whole, the Medicaid population experiences higher hospital readmission rates, which often last longer than privately insured individuals. This accounts for higher health care utilization.[11] This small number of individuals who consume a large portion of health care resources are categorized as super-utilizers. An Agency for Healthcare Research and Quality (AHRQ) study also established a high positive correlation between age and utilization within the Medicaid under-65 subsegment.[12]

Based on the 2019 HealthScan data shown in Figure 7, two drivers of such high consumption across all age groups may be a high prevalence of chronic diseases and obesity in the US population, which further compounds health maladies as the patient ages. The HealthScan data shows these conditions were the leading contributors to a lower average life expectancy among Americans relative to their OECD peers.

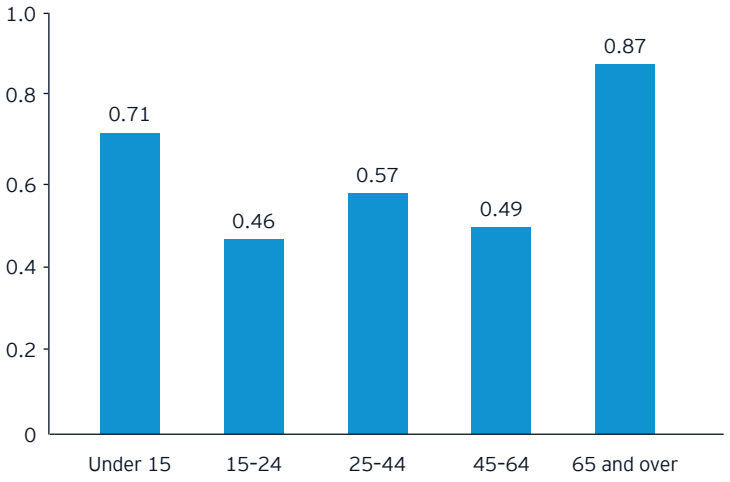
Figure 7: Comparison of health trends in US vs. OECD (2019)[13]



The HealthScan report and data from the Primary Care Collaborative also show that the US underspends on primary care compared to peer OECD nations, with US primary care spend falling between 5% to 7% of total health spending compared to OECD countries spend of 14% on average.[14] In 2018, 440.5 million primary care physician visits were recorded in the US,[15] which translates to 1.36 primary care visits per capita.

When compared against 2018 data in Figure 4, it can be deduced that there was one primary care physician visit for an average of 25–26 health care events, which further shows the non-reliance on primary care utilization in the US. Additionally, the US is just above the average OECD spend on preventive care with 2.9% of US NHE on preventive care compared to a 2.4% OECD average.[16]

Figure 8: Preventive care visits to PCPs per capita by age[17]



As shown in Figure 8, on an average, only one out of two persons in the under-65 age group visits a primary care physician (PCP) for preventive care. Ironically, this underconsumption of primary care services in the early stages of a patient's life may be a driver for overconsumption of services in later stages. There is potentially a "double whammy" effect in play as it can be argued that primary and preventive care services are less expensive and, therefore, less of an economic burden than services used to treat the resulting myriad of chronic conditions commonly found in older Medicare patients. Thus, this underconsumption of less expensive preventive and primary care services may later lead to higher consumption of more-expensive services resulting in a higher economic burden.

An additional driver is the overuse of services that may not be supported by evidence, are duplicative or have already been received by the patient, or may even not be truly necessary, as outlined by the American Board of Internal Medicine (ABIM) Foundation.[18] This may be triggered by avoidance of legal liability by providers. The Institute of Medicine estimates that nearly 10% of total annual US NHE is spent on unnecessary services — totaling $300 billion per year.[19] Medicare beneficiaries are a large contributor of this overuse; for example, the Institute of Medicine reports that 25% of Medicare beneficiaries receive imaging tests for uncomplicated lower back pain, which results in additional procedures that patients don't need, as nearly everyone with these symptoms typically recovers without the costly procedures. The emphasis in the analysis was on the overuse of low-value services, specifically with specialist physicians, that contributes to the larger unnecessary health expenditure segment.

Overuse is not limited to the Medicare population: an analysis of 2.4 million commercial insurance claims in Washington state found that almost half of the health care services provided were found to provide little to no benefit, cause harm, provide a benefit too small given its cost, or is unlikely to be desired by an adequately informed patient.[20, 21] This translated to $282 million in unnecessary spending.[22] The focus of the study — cosponsored by the Washington Health Alliance, the Washington State Medical Association and the Washington State Hospital Association — focused on 47 medical services known to be overused and determined that a combination of lower-value and higher-cost services were contributing to the problem. Additional studies, such as the Lown Institute Hospitals Index, have independently drawn similar conclusions; overuse is a prevailing issue across the US health care system but is predominantly driven by the 65-and-over population, especially within hospitals and particularly for services that don't improve patient health.[23]

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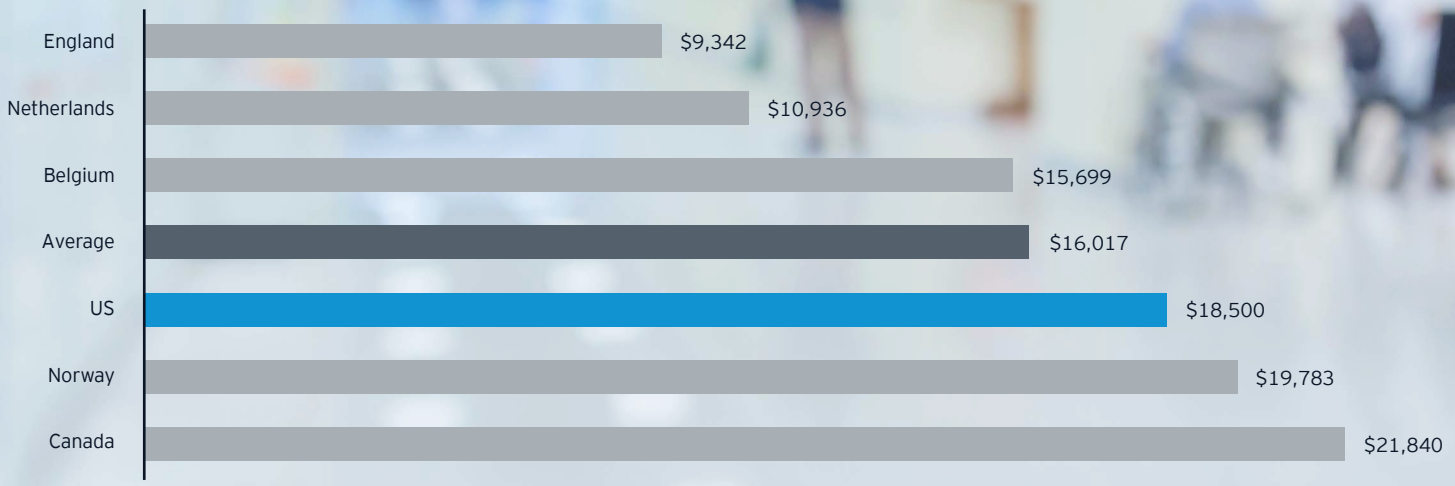
Although overall US health care expenditure is generally higher, contrary to popular perception, the US does not spend significantly more than peer countries on end-of-life care.[24] Rather, the US falls near the middle of the pack in international comparisons of end-of-life care expenditures[25] (Figure 9). The US outperforms comparable countries in two important utilization metrics: lowest proportion of deaths in the hospital and fewest days in the hospital in the last six months of life. However, high-technology interventions and specialized treatment are significantly overutilized relative to the group. In the last six months of life, the study found that over 40% of patients who succumbed to cancer in the US were admitted to the ICU, and 39% of cancer patients received chemotherapy, doubling the average rates of the other countries.

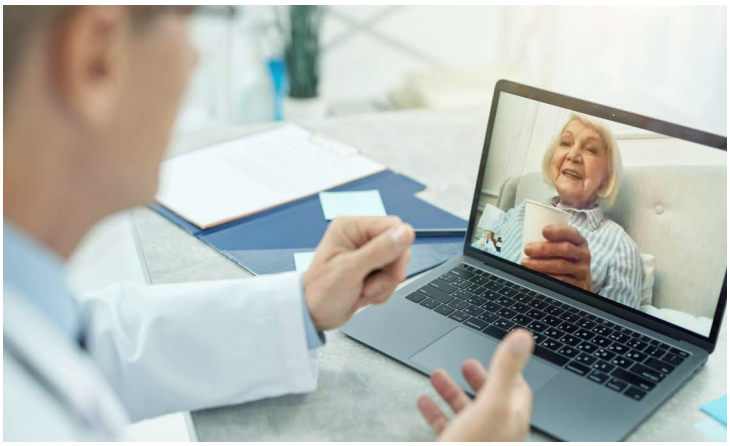
Figure 9: End-of-life care spend in the last six months of life[26]



Americans generally tend to view that more health care is better and opt for elective services, high-tech procedures and advanced care, which may be supporting asymmetric economic incentives for the provider within a fee-for-service model. In this model, the more health care services that are provided, and the more that can be billed, the better. The triggers for this behavior on the behalf of health care providers may be to avoid legal liability and the additional support provided by payers for coverage of procedures.

Unfortunately, this furthers the dilemma of overconsumption as reimbursement for medical procedures is not dependent on necessity or patient-report outcome in determining whether the service provides patient value.[27] A fee-for-service model is not inherently detrimental to patients or health care applications — and positively encourages access to health care — but, it may foster the potential for providers to prescribe more tests, procedures and services, despite a marginal benefit for the patient. A further factor encouraging applying higher-cost services is that Medicare and Medicaid have undervalued services like primary care and behavioral health care. This results in fewer primary care physicians and, in turn, leads them to perform a smaller volume of those services.[28]

In conclusion, our research demonstrates that the 65-and-over segment in the US, typically covered by Medicare, but to some extent Medicaid, has an overconsumption problem. A large portion of this spend is likely driven by a US population that is comparatively "sicker" than their counterparts. Although counterintuitive, the solution may be to increase relatively inexpensive preventive and primary care services in the early years of a person's life. The result can then lead to early identification and effective management of chronic diseases and, in turn, better patient outcomes with lower downstream costs. This approach and other potential solutions are explored in the subsequent papers in the series.



Endnotes

[1] *International Comparisons of Health Prices and Volumes: New Findings*, Organisation for Economic Co-Operation and Development, 2017.

[2] Adjusted for differences in health purchasing power parities (PPPs) is calculated by dividing per capita health care expenditure by the respective PPPs to give a measure of real expenditure or volume of health care goods and services consumed.

[3] *International Comparisons of Health Prices and Volumes: New Findings*, Organisation for Economic Co-Operation and Development, 2017.

[4] Health care utilization data is captured and reported as part of the Medical Expenditure Panel Survey (MEPS) administered by the AHRQ. The data present utilization as events that include "all dental visits, prescribed medicine purchases (including refills), office-based and outpatient visits, emergency room visits, inpatient stays, and home health events." Source: "MEPS summary tables," Agency for Healthcare Research and Quality website, https://meps.ahrq.gov/mepstrends/hc_use/, accessed 10 November 2021.

[5] "National Health Expenditure Data," *Centers for Medicare & Medicaid Services website*, https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical, accessed 10 November 2021.

[6] Ibid.

[7] Calculated as average number of annual events per person for the 65-and-older segment by the under-65 segment (40.4/13.8 = 2.9).

[8] "MEPS summary tables," *Agency for Healthcare Research and Quality website*, https://meps.ahrq.gov/mepstrends/hc_use/, accessed 10 November 2021.

[9] An event is defined by the AHRQ as formal admission to a hospital.

[10] "MEPS summary tables," *Agency for Healthcare Research and Quality website*, https://meps.ahrq.gov/mepstrends/hc_use/, accessed 10 November 2021.

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[13] "Health at a Glance 2021," *Organisation for Economic Co-operation and Development website*, https://www.oecd.org/health/health-at-a-glance/, accessed 10 November 2021.

[14] *Investing in Primary Care: A State-Level Analysis*, Patient-Centered Primary Care Collaborative, https://www.pcpcc.org/resource/investing-primary-care-state-level-analysis, July 2019.

[15] "Ambulatory Care and Physician office visits," *Centers for Disease Control and Prevention website*, https://www.cdc.gov/nchs/fastats/physician-visits.htm#:~:text=Percent%20of%20children%20who%20had%20a%20visit%20with,of%20visits%20made%20to%20primary%20care%20physicians%3A%2054.5%25, accessed 10 November 2021.

[16] Health System Tracker: Preventive care spending is higher in the US than in many comparably wealthy countries.

[17] *National Ambulatory Medical Care Survey*, Centers for Disease Control and Prevention, 2018.

[18] "Our Mission," *Choosing Wisely website*, choosingwisely.org, accessed 10 November 2021.

[19] Eve A. Kerr, MD, and John Z. Ayanian, MD, "How to Stop the Overconsumption of Health Care," *Harvard Business Review*, https://hbr.org/2014/12/how-to-stop-the-overconsumption-of-health-care, 11 December 2014.

[20] "Our Mission," *Choosing Wisely website*, choosingwisely.org, accessed 10 November 2021.

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[23] *2021 Winning Hospitals: Avoiding Overuse*, Lown Institute Hospital Index, https://lownhospitalsindex.org/2021-winning-hospitals-avoiding-overuse/, 4 May 2021.

[24] "Cost of End-of-Life Care in the U.S. is Comparable to Europe and Canada, Finds New Penn Study," *Penn Medicine website*, https://www.pennmedicine.org/news/news-releases/2016/january/cost-of-endoflife-care-in-the, 19 January 2016.

[25] Peer set is composed of Belgium, Canada, England, Germany, the Netherlands, Norway and the US.

[26] "Cost of End-of-Life Care in the U.S. is Comparable to Europe and Canada, Finds New Penn Study," *Penn Medicine website*, https://www.pennmedicine.org/news/news-releases/2016/january/cost-of-endoflife-care-in-the, 19 January 2016.

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