

## VIEWPOINT

# Measuring the Burden of Health Care Costs on US Families

## The Affordability Index

**Ezekiel J. Emanuel, MD, PhD**

Department of Medical Ethics and Health Policy, Perelman School of Medicine, University of Pennsylvania, Philadelphia.

**Aaron Glickman, BA**

Department of Medical Ethics and Health Policy, Perelman School of Medicine, University of Pennsylvania, Philadelphia.

**David Johnson, MPP**

4Sight Health, Chicago, Illinois.



Editorial pages 1869 and 1871



Supplemental content

### Corresponding

**Author:** Ezekiel J. Emanuel, MD, PhD, Perelman School of Medicine, University of Pennsylvania, Medical Ethics and Health Policy, 423 Guardian Dr, Blockley Hall, Ste 1412, Philadelphia, PA 19104 ([mehpchair@upenn.edu](mailto:mehpchair@upenn.edu)).

[jama.com](http://jama.com)

**Affording health care** has become a pressing national concern. According to a 2016 Gallup survey, 27% of individuals in the United States identified affordability as the country's "most urgent health problem."<sup>1</sup> The level of concern is both severe and new. In the late 1990s, HIV/AIDS was the top health concern. In 2008, the leading health concern was accessing medical services. Today, 57% of individuals report that they worry "a great deal" about "the availability and affordability of healthcare."<sup>1</sup> More than 60% indicate that prescription drug prices should be a top health care priority. More than a quarter of individuals have postponed care owing to cost.<sup>2</sup>

When discussing high health care costs, academics and policymakers cite multiple measures: total national health expenditures, health care inflation, health care spending as a percentage of the US economy, and health care "waste." Many individuals in the United States, and even many health care professionals, have difficulty grasping these macroeconomic indicators. How much is \$3.2 trillion? Furthermore, these measures are deeply impersonal. They describe health care spending at the national level. Why should a family be concerned if health care is 17.5% of gross domestic product? Most important, these measures track expenditures, not affordability. They do not describe the ability to pay for health care.

### The Affordability Index

We propose the Affordability Index, a ratio created by dividing the mean cost of an employer-sponsored family health insurance policy by median household income. This index relates health insurance costs to household incomes over time. For 2016, it would be 30.7% (Figure).

No index is perfect. Other policy experts might favor other measures of the affordability of health care. For instance, the denominator might be mean income per household with 1 or more workers. This Alternative Affordability Index would demonstrate the same trend, doubling since 1999 and plateauing after 2011, but with a lower 2016 value of 18.4% because of higher average earnings of working families (eFigure 1 in the Supplement). Others might use the median or mean total compensation rather than income to calculate the index. However, this would double-count employer contributions for health insurance. Moreover, the budgets of most families are based on income, not total compensation. Indeed, mean and median total compensation are neither regularly tabulated nor easily accessible.

Employer-sponsored health insurance (ESI) is a mainstay for the US middle class. Fully 56% of individuals, approximately 178 million, receive health insurance through ESI. Given the mechanics of third-party payment, individuals with ESI experience health care costs through the pur-

chase and use of health insurance products. Because employers contribute most health insurance premiums as pre-tax fringe benefits and insurers pay most health care expenses, most individuals find it difficult to grasp the link between health care costs, insurance premiums, and wages.

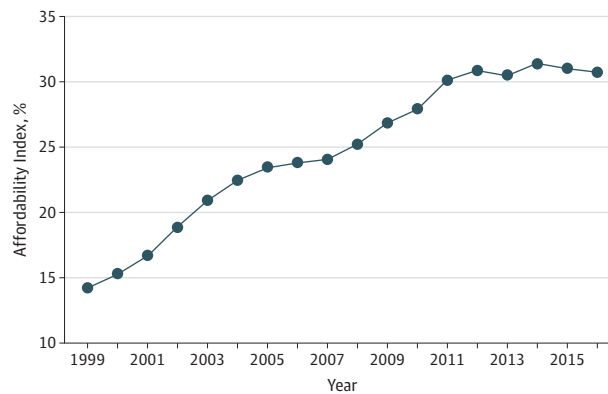
A companion proposed indicator is the Comprehensive Affordability Index, which would include average out-of-pocket (OOP) expenses (co-pays, co-insurance, and deductibles) in addition to insurance premiums (eFigure 2 in the Supplement). The inclusion of OOP costs would generate a more comprehensive assessment of affordability, but also introduces definitional and comparability challenges. There are at least 3 different OOP measures: the Agency for Healthcare Research and Quality's Medical Expenditure Panel Survey (MEPS),<sup>5</sup> the Bureau of Labor Statistics (BLS) Consumer Expenditure Survey,<sup>6</sup> and the Milliman Medical Index (MMI).<sup>7</sup> In 2015, the Agency for Healthcare Research and Quality's MEPS average OOP expenses for a family was \$1589 (calculated)<sup>5</sup>; the BLS figure was \$1365 for a 2.5-person consumer unit<sup>6</sup>; and MMI estimated OOP costs of \$4065 for a family of 4 with an employer-sponsored PPO plan.<sup>7</sup> Another complication is that OOP expenses are heavily skewed, with a per-family OOP mean of \$1589 and median of \$766 (calculated from 2015 MEPS data). This differential indicates that a few families have very high OOP spending, whereas most have little to no OOP medical costs.

### Advantages of the Affordability Index

The proposed Affordability Index has several potential advantages. Its numerator (mean cost of insurance premiums) and denominator (median household income) are reliable, credible, and generated annually. This information is accessible online without complicated programming or calculations. Furthermore, the Affordability Index is widely understandable. It places health insurance costs within an accessible context: as a percentage of income. The index is personal, quantifying the increasing burden of health care costs for average individuals in the United States.

This measure of health insurance costs as a percentage of wages reveals the direct relationship between health care costs and salaries. Higher health care costs depress incomes. As economists indicate, employers ultimately are concerned about total compensation (salary and benefits) per employee. Wages are simply a component of total compensation. Employer "contributions" to health insurance are part of total worker compensation. If the cost of health insurance were to decrease, a greater percentage of total compensation could convert to cash wages. The Affordability Index quantifies the downward pressure that increasing health care costs exert on wages.

Figure. The Proposed Affordability Index



The graph shows family health insurance premiums as a percentage of median income from 1999 to 2016. The Affordability Index is calculated by dividing the mean cost for an employer-sponsored insurance plan (from KFF/HRET Employer Health Benefits Survey<sup>3</sup>) by historical median household income (denominator data are median income figures from the Census Current Population Survey.<sup>4</sup> Data for 2013 and all subsequent years are based on a new Census Population Survey method introduced in 2013).

The Affordability Index also has potential disadvantages. The index is applicable for those with employer-sponsored insurance and may not reflect the financial burden of health care for those with Medicaid or Medicare coverage or the uninsured. In addition, premiums for employer-sponsored insurance do not capture all financial burdens of health care on individuals. It captures only direct costs and ignores indirect financial burdens such as the time and travel expenses associated with accessing specialists and other specific services, the time costs and potential lost wages of administering medical treatments, or caregiving at home for relatives.

### Insights From the Affordability Index

In 2016, the Affordability Index would have been 30.7%, reflecting a mean employer-sponsored family insurance premium of \$18 142<sup>3</sup> and median household income of \$59 039.<sup>4</sup> That is, the mean family health insurance premium (combining both employer and employee contributions) represented 30.7% of median household income (Figure). The Comprehensive Affordability Index for 2015 (the last year for which OOP data are available) would have been 33.9%, again doubling from 1999 when it was 16.7% (eFigure 2 in the Supplement). The same trend is seen if the Comprehensive Affordability Index is based

on mean income from households with 1 or more earners, doubling from 10.8% in 1999 to 20.4% in 2015 (eFigure 3 in the Supplement). To put it in context, in 2015, the average US household spent an estimated \$7023 on all food purchases (including out-of-home purchases), so health care was nearly 2.5 times as expensive as food.<sup>6</sup> This level of health care spending seems difficult to justify.

Using longitudinal data, since 1999, the Affordability Index would have more than doubled from 14.2% to 30.7% (Figure). Between 1999 and 2016, the mean cost of a family health insurance plan increased 4.7 times faster than median household income (213% vs 45%). If the proposed Affordability Index had remained constant at 14.2%, median household income would have been \$9741 greater (\$68 780 vs \$59 039) in 2016. Even if employers had shared only half of these savings with employees, US families would have seen a meaningful \$4800 increase in household incomes.

In addition, since passage of the Affordable Care Act, the Affordability Index and the Comprehensive Affordability Index have both plateaued. This supports what health experts have observed: per-capita health care costs have stabilized relative to household income. Additionally, despite media coverage of rising deductibles, the Comprehensive Affordability Index reveals that average OOP spending has actually remained relatively flat since 2006.

### Implications of the Affordability Index

Directly linking health care costs to income could help to sensitize physicians, hospital executives, pharmaceutical companies, and other health care professionals to the financial burden health care accounts for among individuals in the United States. With a concrete measure, the relationship between health care costs and household income expands beyond anecdotes and aggregate cost data into the everyday lives of people across the United States.

Potential applications of the Affordability Index are manifold. For example, a reasonable policy objective would be to maintain the Affordability Index at its current 30.7% level. Concomitantly, the Secretary of Health and Human Services could use the index and its component parts to identify industries with disproportionately increasing or decreasing health care costs. States could also use the index to pressure health care organizations and clinicians to reign in prices that exceed growth in household income before granting payment increases.

Accurate, understandable, and transparent data are powerful. The proposed Affordability Index could provide a useful, easily understood mechanism for illuminating the financial burden of high health care costs on average families who receive employer-sponsored health insurance.

#### ARTICLE INFORMATION

**Published Online:** November 2, 2017.  
doi:10.1001/jama.2017.15686

**Conflict of Interest Disclosures:** All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Dr Emanuel reported receiving speaking fees from companies, organizations, and professional health care meetings. He has stock ownership of Nuna and is an investment partner in Oak HC/FT. No other disclosures were reported.

#### REFERENCES

- Gallup Inc. Healthcare system. <http://www.gallup.com/poll/4708/healthcare-system.aspx>. Accessed September 17, 2017.
- DiJulio A, Kirzinger A, Wu B, Brodie M. Data note. Henry J. Kaiser Family Foundation. <https://www.kff.org/health-costs/poll-finding/data-note-americans-challenges-with-health-care-costs>. Accessed September 12, 2017.
- Claxton G, Rae M, Long M, et al; Kaiser Family Foundation; Health Research & Educational Trust; NORC at the University of Chicago. Employer health benefits 2016 annual survey. <http://files.kff.org/attachment/Report-Employer-Health-Benefits-2016-Annual-Survey>. Accessed September 12, 2017.
- US Census Bureau. Historical income tables: households: table H-8: median household income by state. <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-households.html>. Accessed September 12, 2017.
- Agency for Healthcare Research and Quality. Medical Expenditure Panel Survey. [https://mepsahrq.gov/mepsweb/survey\\_comp/hc\\_sample\\_size.jsp](https://mepsahrq.gov/mepsweb/survey_comp/hc_sample_size.jsp). Accessed September 12, 2017.
- US Bureau of Labor and Statistics. Table 1300: age of reference person: annual expenditure means, shares, standard errors, and coefficients of variation, Consumer Expenditure Survey, 2015. <https://www.bls.gov/cex/2015/combined/age.pdf>. Accessed September 12, 2017.
- Milliman. 2015 Milliman Medical Index. <http://www.milliman.com/uploadedFiles/insight/Periodicals/mmi/2015-MMI.pdf>. Accessed September 12, 2017.