

# Statistics and Health Care Reform in the United States

Jasjeet Singh Sekhon

6/14/2010

The signature domestic accomplishment of the Obama Administration thus far has been the enactment of health care reform in March 2010, the Patient Protection and Affordable Care Act (PPACA). Whatever its consequences, PPACA is one of the most significant pieces of social policy legislation in the history of the United States. Professor Gruber reviews the background and context of this historic legislation.

I wish to discuss some issues related to health care reform that may be of particular interest to readers of *Significance*. The central theme of my review is that it is strikingly difficult to resolve basic questions about the health care system in the United States, and hence it is difficult to evaluate PPACA. The issues of inference are complex, far more complex than usually portrayed in media coverage, Congressional testimony, and government reports.

Before delving into the challenges of inference, it is important to highlight the size and complexity of the task of reforming the U.S. health care system. The health care system takes up 17.1% of the GDP of the United States which is equivalent to the *total* GDP of the United Kingdom. By this metric, regulating and managing the U.S. health care system is the equivalent of managing and regulating *all* of the goods and services produced in the U.K., the world's sixth largest economy. Not only is the U.S. health care system massive, it is also exceedingly diverse. For example, the health care system functions very differently in a state like Massachusetts than it does in a state like Texas. Massachusetts is known for its academic medical centers, biomedical research, high-quality health care, and it is a state in which only about 9% of the population was uninsured before it enacted its own health care reform in 2006. After this reform, universal coverage has almost been achieved, with 97% of all residents covered as of 2009.<sup>1</sup> In contrast, Texas has an uninsured rate of about 25%. During the debate over the Massachusetts health care plan, proponents could argue that reform did not require new revenues because that state had a low proportion of uninsured

residents, an existing uncompensated care pool, and a highly regulated insurance market. During the national debate, everyone knew that new revenues were needed. The political implications of these differences are far reaching. The Massachusetts health care reform could be sold to voters as a Pareto improvement—i.e., the reform harms no one and makes at least some people better off (such as those who did not have health insurance before). National health care reform advocates had trouble making this claim because difficult decisions had to be made about how to fund the extension of health care, slow the growth of health care costs, and regulate the industry. These stark differences made, and continue to make, the politics of national reform difficult.

The debate on national health care reform was heated. In the debate, many false and outlandish claims were made—e.g., that “Obama care” would lead to “death panels.” These have been amply discussed and discredited by the media. But it has been common for other claims to make the media rounds that may not imply what is generally believed they do. To put it another way, in my opinion, the most problematic ideas in the healthcare debate are not the obviously false ones, but arguments based on true facts that do not imply what people think they do. In this review I briefly discuss three of these. The first is the often cited statistic that although the U.S. spends the most on health care, its health outcomes are poor relative to other industrialized countries. Second is the claim that the U.S. Medicare program, universal public insurance for the elderly, is more efficient than private health insurance providers. Third, that there are easy policy interventions that can reduce both costs and improve health because states and hospitals that spend more on health care get nothing in return.

## **Low Life Expectancy in the United States: Is the Health Care System Culpable?**

One of the most frequently reported facts in the health care debate was that the U.S. spends a greater proportion of its GDP on health care than any other country, while life expectancy in the U.S. is relatively low. These statistics led many commentators to conclude that the U.S. health care system delivers not only expensive but also substandard care. Some went on to argue that since the

extra money must be going somewhere, it is going to excessive health insurance and drug company profits.

The first problem with these claims is that only a small portion of health care expenditures can be accounted for by health insurance and drug company profits. Health insurance profits account for only 1% of total health care expenditures and drug company profits only account for 1.3%.<sup>2</sup> Excluding both health insurance and drug company profits, the U.S. spends 16.7% of its GDP on health care. The absolute expenditures are large, but the relative expenditures are small, and these profits cannot account for why the U.S. spends more on health care than other countries.

For comparison, the U.K. spends about 8% of its GDP on health care and has a life expectancy of 79.7 years. In contrast, the U.S. spends 17.1% of its GDP and has a life expectancy of 78.3 years. Table 1 presents the life expectancy of different age cohorts in both the U.S. and the U.K. Note that life expectancy in the U.K. exceeds that of the U.S. for every age cohort until age 65. Sixty-five year olds in both countries can expect to live about the same number of additional years: 19.0 in the U.S. and 18.9 in the U.K. But from 65 onwards the gap in favour of the U.S. grows. Seventy-five year olds are expected to live half a year longer in the U.S. than in the U.K., which is remarkable given that at birth Americans are expected to live 1.4 years less than individuals in the U.K.

Unfortunately, it is impossible to make any valid inferences about the comparative performance of health care systems from such a table. There are simply too many factors that differ between the U.K. and the U.S. The temptation is to give these figures a simplistic interpretation. The most commonly reported interpretation is that the U.S. health care system provides worse care than the U.K. system because of lower life expectancy at birth. Alternatively, one could argue that medical care in the U.K. for the elderly is poorer than it is in the U.S.

Such interpretations should be resisted. It is difficult to determine what effect health care systems have on overall health outcomes. Many factors differ profoundly between the U.S. and the U.K.; for example, the behavior of people, their demographics, and other social phenomena such as income inequality and poverty rates.

There are a number of well documented behavioral differences relevant for health care outcomes across countries. For example, the United States had the highest per capita cigarette consumption rate in the developed world over a 50-year period ending in the 1980s.<sup>3</sup> Smoking in early life continues to affect health outcomes as cohorts age.<sup>4</sup> Indeed, one study estimated that if deaths attributable to smoking were eliminated, the ranking of U.S. men in life expectancy at age 50 among 20 OECD countries would improve from 14th to 9th, while U.S. women would move from 18th to 7th.<sup>5</sup> And as is frequently reported, obesity rates are unusually high in the United States.<sup>6</sup>

The demographics of the U.S. are different from those of other countries. And health outcomes vary greatly across demographic groups. The African-American infant mortality rate is 13.7 per 1,000 live births, while the rate for whites in the U.S. is 5.7. The infant mortality rate for whites compares favorably with other OECD countries. The rate for blacks is a national tragedy. Even more disturbingly, the infant mortality rate of middle-class blacks with medical insurance is also significantly higher than that for whites. But the question at hand is whether the health care system is to be faulted for these differences or other social phenomena?

For example, some argue that social inequality is linked with higher rates of morbidity and lower life expectancy, and the U.S. has more income inequality than other industrialized countries. The evidence based on human studies is only suggestive, but the effect has been observed in experiments with social animals such as primates.<sup>7</sup> This may be a reason to pay attention to the distribution of income in the U.S., but one should not judge the health care system by outcomes caused by other social structures. Indeed, given the habits of Americans, their demographics, and other social phenomena, it might be argued that it is remarkable that life expectancy at birth in the U.S. isn't even lower relative to the U.K., and that it would be lower if medical expenditures were reduced to U.K. levels.

The act of evaluating a health care system by making comparisons of the sort presented in Table 1 reached its logical limit in the World Health Organization's (WHO) report on national health systems. This 2000 report received extensive media coverage, especially the result that in a

Table 1: Life Expectancy by Age Cohort, U.S. and U.K.

Age	U.S.	U.K.
0	78.3	79.7
20	59.2	60.3
40	40.3	41.0
60	22.8	22.9
65	19.0	18.9
70	15.4	15.1
75	12.1	11.6

performance ranking of the health care systems of 191 nations, the U.S. ranked 37th.

The WHO study actually presents two different rankings. The first is based on “overall attainment” (OA) and the second on “overall performance” (OP). Both rankings use the same data, but the OP ranking is adjusted to reflect a country’s performance relative to how well it theoretically could have performed. The U.S. ranked 15th in the OA rankings but 37th in the OP ranking.

The WHO ranking consists of five different types of measures: health level (disability-adjusted life expectancy); responsiveness (measures a variety of health care system features, including speed of service, protection of privacy, choice of doctors, and quality of amenities); the distribution of responsiveness across population groups; and financial fairness. In the report, the U.S. ranks first in the responsiveness measure. What drags the U.S. down to 15 is the relatively low life expectancy and unequal distribution of access and costs. And what makes the ranking go from 15 to 37 is the high cost of the U.S. system.

These details were rarely reported. The details matter because preferences for equality are embodied in the WHO study. But it is well documented that American voters prefer a greater degree of inequality than European voters.<sup>8</sup> And the WHO report concedes that the responsiveness of the U.S. medical system (for those who have access) is second to none. It is a political, ethical and philosophical question how responsiveness should be traded-off against equality. It is not a scientific question.

We are left with a conundrum. The U.S. has poor health outcomes but arguably the world’s

most responsive health care system for those with access. Are there ways of evaluating the U.S. health care system other than health outcomes that are not prone to the criticisms discussed?

Researchers have begun to make progress. For example, Preston and Ho<sup>9</sup> acknowledge the issues with the usual methods of evaluating health care systems that I have discussed. They propose a promising approach to examine if the poor health outcomes in the U.S. are the result of a poor health care system or other behavioral and social factors.

In their study, Preston and Ho focus on how particular diseases are identified and then treated across countries. This is a difficult task because there are no internationally comparable data for the actual incidence of diseases. Disease incidence is not the same as disease detection. Disease detection is a combination of both disease incidence and the mechanics of identification. A country with a good health care detection system may appear to have a higher disease incidence, when in fact it does not. Moreover, even if disease incidence were measured without error, it could be less the result of the health care system's ability to prevent disease and more the result of other social factors.

Because of these problems, the authors focus on evaluating health care systems by measuring their ability to diagnose diseases in a timely fashion and to then treat them. These two factors are core elements of what we expect a health care system to do, and they are less prone to be influenced by other social factors than say the prevalence of various diseases. The authors investigate the comparative mortality trends for prostate cancer and breast cancer in part because effective methods of screening for these diseases have been developed recently so their rates of adoption can be measured. They find that the new diagnostic methods have been deployed earlier and more widely in the U.S. than in the industrialized countries they used for comparison.<sup>10</sup> And since effective methods are being used to treat these diseases at higher rates than elsewhere, the U.S. has had a significantly faster decline in mortality from these diseases than comparison countries. For these diseases at least, the U.S. health care system appears to be operating better than those of peer nations.

## **Administrative Costs**

An often debated issue is whether Medicare, the universal government health care program for the elderly, is more efficient than private health insurance providers. This would appear to be a simple question, but it is not. The standard answer is that Medicare is more efficient as measured by the proportion of every health care dollar spent that goes to administrative overhead.<sup>11</sup> The problem with this measure can be illustrated by a thought experiment. Imagine a health care insurer that is efficient, but that for every person enrolled it spends a small amount (say a few cents) on administrative costs. If this health care provider only served healthy people, it would spend 100 percent of its dollars on administrative costs. The general lesson is that if a health care provider has a sicker patient pool, it might artificially look efficient by this measure simply because it spends more money on delivering health care. And since Medicare enrolls the elderly, this is a real concern.

An alternative measure has been proposed. This measure is based on administrative costs per person enrolled instead of dollar spent. By this measure, Medicare performs worse than private insurance providers.<sup>12</sup> But this measure suffers from a similar defect as the previous one. If every person who uses medical services costs an extra amount to service, Medicare may look artificially inefficient.

Any attempt to measure the efficiency of Medicare relative to private insurers is further complicated by the fact that there is a cross-subsidy from private insurance patients to Medicare patients. Hospitals lose money on Medicare patients, and they recover that loss from patients with private insurance. The losses can be large. For example, the Mayo Clinic, one of America's premier hospitals which is held up by the Obama Administration to be an exemplar of excellent and cost-effective care, reports that it lost \$840 million dollars on Medicare patients in 2009.

Another commonly reported statistic regarding efficiency is that the per capita health care administrative costs are lower in Canada than in the U.S. There is little doubt that administrative costs are lower in Canada, even though the precise magnitude of the gap is open to debate.<sup>13</sup> But there is another efficiency worth considering. The U.S. may be more efficient than Canada in solving

a time inconsistency problem: people want to spend more on health care when they are sick than when they are healthy. And the U.S. system is good at obtaining money from patients when their willingness to pay is high—i.e., when they are sick.

In the United States, persons who wish to spend more on health care than the norm have a simple way of doing so: they can purchase premium private medical insurance. It is far more difficult to increase medical expenditures through the taxation system, given contemporary political and fiscal constraints. In a single-payer system, however, increases in medical expenditures are possible only through the taxation system. And even if, as some surveys suggest, most Canadians are willing to spend more on health care, taxpayers cannot be sure that any given tax increase will actually go to health care expenditures. Therefore, Canadian taxpayers generally resist tax increases, and underfunding relative to preferences results. The underfunding problem is usually considered to be a separate issue from the single-payer system itself, but the very structure of the single-payer system may cause the problem.

The taxation system has certain limitations that funding via private sources helps to avoid. For example, as pointed out above, in the U.S., there is a significant cross-subsidy from private insurance patients to Medicare patients, a program that has many similarities with single-payer systems. An analogy from another sector may be helpful. What would happen to total spending on higher education from all sources if there were no private universities in the U.S.?

## **Easy Cost Savings?**

The Obama administration in general and Peter Orzag in particular, the head of the Office of Management and Budget, often referred to studies by researchers at Dartmouth College that showed the correlation between health care expenditures and patient health outcomes to be zero or even negative.<sup>14</sup> The Dartmouth researchers examined how much hospitals across the country billed Medicare for patients with a chronic illness who were in their last six months or two years of life. Although the studies show that health care costs vary greatly across the country, the studies

cannot show why. For example, by their measures, the Mayo Clinic is shown to be cheap while the University of California at Los Angeles (UCLA) Medical Center is shown to be expensive. But why? Many things differ between the two medical centers. For example, the main Mayo Clinic is located in Rochester, Minnesota while UCLA is located in a major metropolis with almost a hundred times the population of Rochester.

Many papers have recently been written challenging the Dartmouth studies. Some note, for example, that only measuring Medicare expenditures may be misleading especially given the cross-subsidy from private insurance patients. Others try to make hospitals around the country comparable by adjusting for cost of living and other observable factors. The core problem, however, is that it is unclear if one can observe the factors necessary to make different patient groups comparable through statistical adjustment. If we could successfully adjust for confounders, why would we run randomized controlled experiments for new drugs? Why not use for drug approval whatever statistical methods we think can make both the patient groups and other factors between the Mayo Clinic and UCLA comparable?

The problem is that much of social life is about selection. For example, smarter students go to better schools so it is difficult to estimate the effect of going to Harvard versus the University of Massachusetts on life outcomes. Likewise, at the level of individual patients, higher medical spending is associated with higher mortality rates, even after attempting to control for observable characteristics such as age and comorbidity levels. Regional or hospital level estimates aggregate the choices made at the individual level.

The Mayo Clinic serves a significantly more white, residentially stable, and middle class patient group than UCLA. It is unclear how to adjust for that. For example, if a patient is less likely to return for follow-up care, might not a doctor perform more tests and procedures now?

To try to overcome these difficult issues of selection, MIT's Joseph Doyle employs an innovative research design.<sup>15</sup> He compares the medical outcomes of patients who are exposed to different healthcare systems not designed for them. He compares patients who are on vacation far from home when they have a health emergency. He shows that out-of-state tourists in higher-

spending parts of Florida who experience unexpected health shocks—such as heart attacks, strokes, and hip fractures—have significantly lower mortality rates than tourists in lower-spending areas. High-spending areas provide greater intensive care unit services, a higher likelihood of treatment provided in a teaching hospital, more surgical procedures, and higher staff-to-patient ratios.

Doyle's design relies on the assumption that these medical events are unforeseen so people do not select their vacation destination in part because of the expected quality of medical care. As robustness checks, Doyle examines patients who are similar on observables such as income, and he compares the results for tourist destinations that can be characterized as close demand substitutes.

Doyle's result may be explained away if visitors in better health choose to visit higher spending areas. However, the expectation would be the reverse: sicker people would visit areas with higher spending and more teaching hospitals.

There is some political wishful thinking at work. If the Dartmouth group's findings are taken at face value, then there may be an easy, relatively painless, way to control medical costs—hospitals can be made to reduce expenditures without impacting patient outcomes. There is also statistical wishful thinking at work. The hope is that with some adjustment of observed factors, we can estimate the effect of being treated at one hospital versus another or one state versus another. I wish we understood social systems well enough to do that reliably.

## **Conclusion**

Nothing in this review should be taken to mean that I oppose or support the health care reform that was passed. The issue is that analysts and politicians, both in public and in private, have generally been optimistic about their ability to make judgements about various parts of the health care system. Some reform was needed, and will probably be needed again, since the rate of growth of medical expenditures in the U.S. is not sustainable. This is a special case of a problem facing all advanced industrialized countries. As populations age, social programs, particularly for retirement and medical care, are taking up bigger and bigger portions of national budgets across Europe and

North America. Already, one could say that most of what the U.S. government does domestically is redistribute money from the young to the old.

The U.S. health care system is certainly inefficient, and the number of citizens that are uninsured is unacceptably high. Some reform could be helpful. The question is if the government can reduce inefficiency and control costs without doing collateral damage to parts of the system that perform well, such as the responsiveness of the medical system to the wishes of insured patients and the quality of America's research hospitals.

With a system as complicated as health care there will always be many unintended consequences to any reform. For example, one argument in defence of the Massachusetts health care reform passed in 2006 was that tax payers and the insured were already paying for the uninsured because they would visit hospitals when they became sick. These uninsured patients were using Emergency Departments (ED) for simple care instead of visiting clinics or family physicians, and ED visits are more expensive. However, in the aftermath of the 2006 Massachusetts health reform, visits to EDs have gone up and ED wait times have increased.<sup>16</sup> The problem is that health insurance was extended so patients are more likely to seek medical care. But these patients were not provided with physicians or alternative clinics to use. And given the shortage of internists in the U.S., it is unclear how to fix this problem. This is not to argue that extending health care wasn't the proper policy. The point is that it is difficult to predict the consequences of such policy interventions, and it would be helpful if analysts and politicians acknowledged that uncertainty. To put it bluntly: evidence that would be insufficient to approve a single drug is being marshaled to change the entire medical system. This, in and of itself, isn't an argument for doing nothing: decisions must be made even under uncertainty. But not acknowledging the uncertainty and dismissing opponents as irrational if the evidence does not convince them poisons the political debate no less than charges of "death panels."

## Notes

<sup>1</sup>Weissman, JS and JA Bigby. “Massachusetts Health Care Reform—Near-Universal Coverage at What Cost?” *New England Journal of Medicine* 2009;361:2012–5.

<sup>2</sup>Reinhardt, UE. “The Pharmaceutical Sector in Health Care” in *Pharmaceutical Innovation: Incentives, Competition, and Cost-Benefit Analysis in International Perspective*, eds. FA Sloan and CR Hsieh. Cambridge University Press: New York. 2007.

<sup>3</sup>Forey, B, J. Hamling, P. Lee, and N. Wald, editors. *International Smoking Statistics: A Collection of Historical Data from 30 Economically Developed Countries*. Oxford University Press. London. 2002.

<sup>4</sup>Preston, S and H Wang. 2006. “Changing Sex Differentials in Mortality in the United States: The Role of Cohort Smoking Patterns.” *Demography* 2006;43:413–34.

<sup>5</sup>Preston, S, D Gleit, and J Wilmoth. “Contribution of Smoking to International Differences in Life Expectancy.” Forthcoming in Eileen Crimmins and Samuel Preston, *Divergent Trends in Life Expectancy*. National Research Council. Washington, D.C. 2009.

<sup>6</sup>Organisation for Economic Co-operation and Development (OECD). *OECD Health Data 2008: How Does the United States Compare?* Organisation for Economic Co-operation and Development. Paris. 2008.

<sup>7</sup>Deaton, A. “Health, Inequality, and Economic Development,” *Journal of Economic Literature* 2003;41:113–158. Brunner, E and M Marmot. “Social Organization, Stress, and Health,” in *Social Determinants of Health*. Michael Marmot and Richard G. Wilkinson, eds. Oxford: Oxford University Press. 1999.

Sapolsky, R. “Endocrinology Afresco: Psychoendocrine Studies of Wild Baboons.” *Recent Progress in Hormone Research* 1993;48:437–68.

<sup>8</sup>Alesina, A., R. Di Tella, and R. MacCulloch. “Inequality and Happiness: Are Europeans and Americans Different?” *Journal of Public Economics* 2004;88:2009–2042.

<sup>9</sup>Preston, S. and J. Ho. “Low Life Expectancy in the United States: Is the Health Care System at Fault?” NBER Working Paper. 2009.

<sup>10</sup>The authors compare the performance of the U.S. with a group of 15 economically developed OECD countries: Australia, Austria, Canada, Finland, France, Germany, Greece, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, and United Kingdom.

<sup>11</sup>JS Hacker, “The Case for Public Plan Choice in National Health Reform.” Institute for America’s Future. 2009.

<sup>12</sup>Book, RA. “Medicare Administrative Costs Are Higher, Not Lower, Than for Private Insurance.” Heritage Foundation.

<sup>13</sup>For example, see Woolhandler S, T Campbell, and DU Himmelstein. “Costs of health care administration in the United States and Canada.” *New England Journal of Medicine* 2003;349:768–75, and Aaron HJ. “The costs of health

care administration in the United States and Canada—questionable answers to a questionable question.” *New England Journal of Medicine* 2003;349:801–3.

<sup>14</sup>Dartmouth Atlas of Health Care. *The Care of Patients With Severe Chronic Illness*. Hanover, NH: Center for the Evaluative Clinical Sciences, Dartmouth Medical School. 2006.

Dartmouth Atlas of Health Care. *Tracking the Care of Patients with Severe Chronic Illness*. Lebanon, NH: The Dartmouth Institute for Health Policy and Clinical Practice. 2008.

<sup>15</sup>Doyle, J. “Returns to Local-Area Healthcare Spending: Using Health Shocks to Patients Far From Home.” Working Paper. February 2010.

<sup>16</sup>American College of Emergency Physicians. <http://www.acep.org/MeetingInfo.aspx?id=46812>, accessed June 10, 2010.