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The Key Obamacare Question: How Much Should Taxpayers Spend to Give Uninsured People More Years of Life?

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A new study published this week, "Changes in Mortality After Massachusetts Health Care Reform," purports to show that the Massachusetts reform law ("Romneycare") saved lives. Led by Benjamin Sommers, a Harvard health economist who served briefly in the Obama administration, the authors claim that covering the uninsured reduces their annual risk of death by 30 percent, which means about 1 death avoided for every 830 uninsured people given coverage.

On the assumption that it would cost $4,000 annually to cover the average uninsured person, University of Chicago professor Harold Pollack argues "It's not so cheap, either, but it's still worth it." Michael Cannon at Cato Institute reaches the opposite conclusion. Assuming it cost $5,000 apiece to cover the uninsured, he argues that the policy fails to meet the World Health Organization's definition of cost-effectiveness.

Who's right? Is spending $3.3 million (Pollack) or $4.2 million (Cannon) to save a single life a worthwhile expenditure of tax dollars? Is the only reason these two disagree simply because they used different assumptions about the cost to cover the uninsured? You can decide the answer to both questions for yourself, but it helps to have a little bit more information.

How did Pollack and Cannon reach their conclusions?

Professor Pollack hypothetically assumes it would cost a state $4,000 to cover the uninsured for a year without explaining the origin of this figure. As it turns out, the CBO estimates that for the average person who qualifies for a subsidy on the exchange, the average taxpayer-financed subsidy will be $4,410. So Professor Pollack is not that far off the mark in his assumption.

Mr. Cannon uses $5,000 since it represents the average cost of employer-based coverage in Massachusetts in 2010. This translates into $4,150,000 per life saved.

The WHO considers a medical intervention to be "not cost-effective" if it costs more than three times a nation's per capita GDP per year of life saved. With U.S. GDP per capita at $51,749, using Cannon's $5,000 number, the average person whose life was saved by the Massachusetts health reform would have had to gain at least 26.7 years of added life. As Mr. Cannon puts it: "Given that the mortality gains were concentrated in the 35–64 group, that seems like a stretch." Ergo, even if the Massachusetts results were correct, this was not a cost-effective way to spend taxpayer money.

What's missing from their analyses?
Professor Pollack and Mr. Cannon both would be quick to concede that they've done just simple "quick and dirty" calculations to arrive at their conclusions. The reality is that there are two big unknowns even if we take the Massachusetts findings at face value.

What percent of lives saved were due to the insurance expansion?
First, we have no way of knowing whether all the lives purportedly saved in Massachusetts were among those who previously were uninsured, or whether there was something else in the law reducing mortality, too.

Unlike the Oregon Health Study, which actually looked at individual people and examined their risk of death (finding no statistically significant effect, though Pollack points out that was hard to do in a study of that size), the Massachusetts study compared aggregate county-level mortality statistics before and after the Massachusetts law took effect. By comparing what happened in statistically comparable counties outside of Massachusetts, researchers were able to deduce the extra gains in mortality-risk reduction that occurred in Massachusetts but were not observed elsewhere. The researchers arrived at their "number needed to treat" (NNT) figure of 830 uninsured by *assuming* that all of the mortality gains came from providing insurance to people who were previously uninsured, even though they freely concede that other components of the Massachusetts reform (enhanced benefits, for instance) might have produced mortality gains among those who always had insurance as well. This obviously matters a great deal — if the insurance expansion actually accounted for only half the mortality gains, it would mean the NNT would double, as would the cost per life saved.

How many years of life were saved?
A related puzzle is the average number of years gained per life saved among the uninsured (and we should recognize this number may be much different among the uninsured than it would be among insured residents of Massachusetts since the former group is much younger on average than the latter). As Michael Cannon notes, most of the gains were concentrated in the 35—64 age group, which narrows the plausible range of what the average gain in life expectancy might be. Someone who is 60–64 is 7.3 times as likely to die in a given year as someone age 35–39. The reason this matters is that there are reasonably well-accepted rules of thumb about the value of what's called a quality-adjusted life year (QALY). If we can convert the cost per life figure into a cost per QALY figure, we will be on more much solid ground in figuring out whether coverage for the uninsured is a cost-effective investment.

Take Professor Pollack's own example. He argues that a $3.3 million-per-life intervention must be cost-effective since we spent $6.5 million (in today's dollars) per infant life saved through Medicaid expansions in the late 1980s and early 1990s. But of course an infant whose life was saved in 1990 had a life expectancy of about 75 years, meaning the real cost was $87,000 per added year of life. In contrast, today's 50-year-old only has an added life expectancy of 31.4 years, meaning that Massachusetts implicitly spent $106,000 per added year of life assuming the average person who would have otherwise died was 50 years old. Instead of being half as expensive as what professor Pollack characterizes as a "widely accepted public health intervention" the Massachusetts plan actually was 22 percent more expensive on a cost-per-life

year basis. (Which does not automatically mean it was not a cost-effective intervention, of course.)

On a related point, a year today does not and should not have the same value as a year five years from now, just as a dollar today is worth more than one received five years from now. The conventional practice (bizarre as it may sound to the average man on the street) is to discount future years by the same social rate of discount typically used to discount future dollar-denominated costs and benefits when doing public-policy analysis. Using a very typical discount rate used for such purposes — 3 percent — the 75 years of life saved per infant in the example above is equivalent to 29.7 years today (what's called "net present value terms"). Thus, all other things equal (costs, adverse side effects etc.), a rational decision-maker should be indifferent between extending the lives of 297 people by one additional year or saving the lives of 10 infants — the net number of years of life saved is equivalent once discounting is taken into account. Along the same lines, the 31.4 years hypothetically gained per uninsured life saved in Massachusetts is equivalent to only 20.2 years.

Note that this greatly alters our calculation, since it implies the Medicaid expansion for pregnant women and infants actually cost $220,000 per added year of life while the Massachusetts health reform cost $165,000 per added year of life.

How many quality-adjusted life years were saved?

But we even can do one better than this. Saving the life of someone who will be bedridden for the remaining years of life is a very different proposition than saving the life of someone who is fully functional. Among health economists, the gold standard is to try and convert years of life into a common metric that is easier to compare across individuals: quality-adjusted life years (QALYs). On a quality of life scale, a 1 denotes a state of "optimal health" (which is variously described as "normal good health," "free of all disease, symptoms, or dysfunction" or "health as good as you can imagine it") while 0 denotes death. Thus, one QALY is equivalent to being in a state of optimal health for a year. As one example, patients with untreated obstructive sleep apnea have self-rated their quality of life at 0.63, meaning that one year in such a condition would be equivalent to 0.63 QALYs. Similar surveys have been conducted to demonstrate that the self-rated health of the average American is 0.871.

So, is universal coverage cost-effective?

We now finally are in a position to more accurately judge the cost-effectiveness of the mortality gains attained under the Massachusetts health-reform law. Since we don't know from the Sommers et al. study either the average age of death or the share of observed mortality gains attributable to the uninsured, the table below provides a range of plausible estimates for these parameters to show how much difference it makes in calculating what we want to know: How much did it cost taxpayers to save one QALY? To generate this table, I used the CBO figure of $4,410 in subsidies per subsidized exchange participant and a 3 percent discount rate.

Taxpayer Cost to Obtain One Quality-Adjusted Life Year Under Obamacare

Average Age of Death	Years Gained per Life Saved	QALYs Gained per Life Saved	Taxpayer Cost per Quality-Adjusted Life Year (QALY) from Covering the Uninsured in Massachusetts			
			Share of Mortality Gains Attributable to Uninsured			
			25%	50%	75%	100%
60	23.1	20.1	$980,636	$490,318	$326,879	$245,159
50	31.4	27.3	$792,812	$396,406	$264,271	$198,203
40	40.5	35.2	$678,801	$339,400	$226,267	$169,700

Using the WHO threshold, which is $155,247 for the U.S., Michael Cannon appears to be correct that the Massachusetts health reform was not cost-effective — even when we optimistically assume that the expansion of insurance accounted for all of the measured mortality gains and that the average age of those who averted early death was 40. (Observant readers will note that strictly speaking, the WHO criterion is based on cost per added year of life, not per QALY, but even if we multiply the table figures by 0.87 to take this into account, every figure shown would still exceed 3 times GDP per capita with the lone exception of the very last cell on the right bottom, which has what are more or less unrealistically optimistic assumptions.)

That said, according to Harvard health economist David Cutler, "typical estimates of the value of a year of life in good health are between $100,000 and $250,000" — which allows a higher price than the WHO figure. Using this more generous standard of cost-effectiveness, the Massachusetts health reform would pass muster only under the most optimistic assumptions — that all the mortality gains came from people who were uninsured or that 75 percent of the gains came from the uninsured and the average age of those who were spared an early death was 40.

There are three important caveats that highlight the optimistic nature of assumptions used here. First, for purposes of analysis, I have accepted that the full amount of the measured mortality gains in Massachusetts are genuine and not partially attributable to a statistical artifact or unmeasured variables. Second, had I used an equally common discount rate used in cost-effectiveness literature (5 percent), all of the numbers in my table would have inflated accordingly. $169,700, the most optimistic price of the years of life saved, would have become $222,978, and $198,203 would have become $248,569. Under those assumptions, these two cells would have been the only ones meeting the more generous cost-effectiveness threshold suggested by Professor Cutler. Finally, what happened in Massachusetts is not necessarily what would happen under Obamacare (as even Professor Pollack concedes). As just one example, Massachusetts ranks #4 in the nation in America's Health Rankings. Whether states such as Mississippi (#40) or Arkansas (#49) could achieve similar gains is an open question.

I have noted elsewhere that for the same amount we are spending to expand coverage under Obamacare, we could save eight times as many lives among the poor as Obamacare might save simply by using proven smoking-cessation interventions.

I have also shown that any of the purported reductions in financial risks facing the uninsured could be attained far less expensively than by purchasing the kind of comprehensive insurance mandated under Obamacare. Put a different way, Obamacare has the nation spending upwards of $18,000 (per year!) for a family of 4 with $24,000 in income simply to provide them with health insurance coverage. Is it possible to imagine ways in which we might achieve rather substantially greater levels of happiness for such families with the investment of an equivalent amount of resources (job training, relocation to safer neighborhoods etc.) on their behalf?

As we ponder how to repeal and replace this terribly misguided law, perhaps we ought to revisit the question of just exactly what we are trying to achieve and how much it is worth spending to achieve it. The health-policy literature notwithstanding, I would love to see polling data on whether Americans think spending $250,000 to buy the uninsured one year of good health is a worthwhile expenditure of taxpayer dollars in light of all the other uses to which those same dollars might be put. The Massachusetts study proves beyond any doubt that even if we assume very optimistic mortality gains from expanded coverage, the issue of this law's cost-effectiveness is very much in doubt.