College of Public Health and Human Science

COST EFFECTIVENESS OF HEALTH INSURANCE IN THE ERA OF THE ACA

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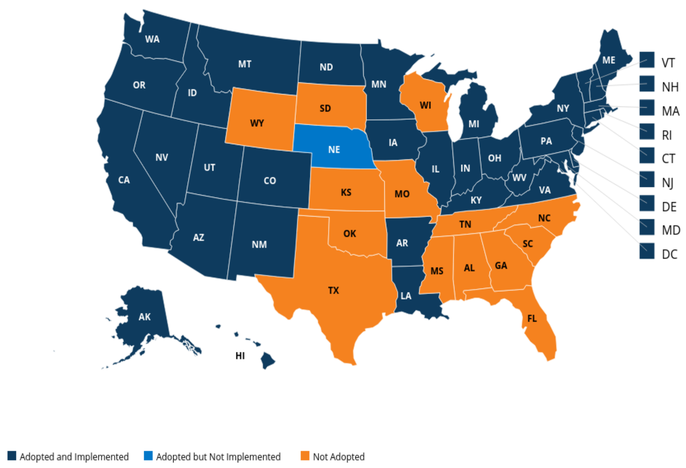
Status of State Action on the Medicaid Expansion Decision



SOURCE: Kaiser Family Foundation, kff.org

ABSTRACT

Objectives: The Affordable Care Act (ACA) has made a significant stride in improving access to affordable health insurance coverage for the working-adult population in the U.S. Unfortunately, little is known about the value of health insurance–whether health insurance coverage is cost-effective–in the current health system context. Using the most recent years of data from a nationally-representative population health survey, we evaluated cost-effectiveness of health insurance.

Methods: We analyzed data from the nationally-representative sample of adults aged 25 to 64 from the Medical Expenditure Panel Surveys for years 2005 to 2016. SF-6D scores were used to estimate Quality Adjusted Life Years (QALY). Total annual health expenditures were included in cost calculation. We estimated regression models adjusting for a comprehensive set of social determinants of health, and then predicted QALY and cost. We used Markov model to calculate incremental cost-effectiveness ratio (ICER) by private and public insurance, compared to uninsured, from the health system perspective. We applied the 2016 mortality rates from CDC to determine the proportion of subjects dying, and used 3% discount rate for each year advancing in the Markov model.

Results: Compared to being uninsured, having private insurance beginning at 25-year-old through 64 result in an ICER of $63,511 per QALY, and the ICER for having public insurance would be -$77,639 per QALY.

Conclusion: Private health insurance deems cost-effective. However, compared to uninsured individuals, persons with public insurance incurred higher expenditure but reported lower QALY. More efforts are needed to improve the value of public insurance.

INTRODUCTION

Even though insurance itself could provoke endogenous problems (i.e., moral hazard, adverse selection, agency problem and physician-induced demand) caused by players in healthcare system, health insurance has continued to develop in public roles. Health insurance faced the biggest change with the Affordable Care Act (ACA) in 2010 since the creation of the Great Society programs in the 1960s[1].

The Affordable Care Act (ACA) has made a significant stride in improving access to affordable health insurance coverage for the working-adult population through a combination of health insurance exchanges, insurance market reforms, and the Medicaid expansion[2].

Although the primary purpose of health insurance is to protect the insured against catastrophic medical expenses by spreading the risk over more people, we also want to know whether it is affordable. The previous study showed that when the uninsured provided with private insurance they gained in quality-adjusted life at costs[3]. Then we wonder if having insurance is cost-effective and how cost-effective is health insurance with health spending expected to increase even after the ACA expansion.

The objective of this study was to measure whether health insurance is cost-effective by estimating Incremental Cost Effectiveness Ratio (ICER) using total annual health expenditures and Health-Related Quality of Life (HRQL) scores in terms of insurance type.

STUDY DATA AND

We used the Medical Expenditure Panel Survey (MPES) data from 2005 to 2016 among people aged 25 to 64. The MEPS-Household Component data captured nationally representative information on annual health expenditures, sociodemographic characteristics, health behaviors, perceived mental/health status, and insurance type. The MEPS-Medical Conditions data employed the list of priority conditions and injuries to detect any chronic diseases.

METHODS

To estimate cost-effectiveness of having health insurance by types, three processes were carried out. First, HRQL scores were obtained from the SF-6D. The average age, proportion female, and average Mental/Physical Health Composite Summary (MCS/PCS) Scores were used to predict SF-6D scores[4]. The scores were adopted to generate Quality Adjusted Life Year (QALY)-compatible values between 0 and 1 for a cost-effectiveness analysis where 1 represents perfect health and 0 indicates a death.

Regression analyses predicted the total annual health expenditures and SF-6D adjusting for a comprehensive set of social determinants of health. Finally, the Markov model was used to estimate the ICER associated with health insurance in average insured and uninsured a 25-year-old through age 65.

STUDY RESULTS

Table 1. Total Annual Expenditure and SF-6D (2005-2016)

	Total Annual Expenditure ($)				SF-6D (QALY)			
	Private	Public	Insured	Uninsured	Private	Public	Insured	Uninsured
25 ~ 64	3,964.18 (12,051.85) N=129,686	6,857.78 (21047.97) N=31,675	4,532.19 (14,318.44) N=161,361	1,106.47 (5,249.01) N=47,136	0.823 0.116 N=115,023	0.709 (0.170) N=28,312	0.808 (0.135) N=143,335	0.812 (0.131) N=39,505
25 ~ 34	2,561.19 (8,656.79) N=31,177	3,884.75 (27,347.31) N=9,086	2,859.87 (15,069.51) N=40,263	587.41 (2,484.26) N=15,811	0.850 (0.095) N=26,933	0.783 (0.140) N=8,036	.834 (0.111) N=34,969	0.839 (0.110) N=12,905
35 ~ 44	2,926.68 (9,047.37) N=33,461	5,070.91 (12,717.91) N=7,618	3,324.32 (9,867.19) N=41,079	838.25 (3,906.54) N=13,041	0.839 (0.105) N=29,752	0.733 (0.165) N=6,810	.819 (0.125) N=36,562	0.821 (0.122) N=11,140
45 ~ 54	4,072.82 (12,633.41) N=35,459	8,665.31 (19,942.49) N=7,813	4,902.02 (14,342.44) N=43,272	1,327.70 (5,935.39) N=11,151	0.828 (0.117) N=31,622	0.667 (0.175) N=7,038	0.798 (0.143) N=38,660	0.792 (0.143) N=9,411
55 ~ 64	6,485.55 (16,253.09) N=29,589	10,560.35 (19,316.66) N=7,158	7,279.29 (16,970.1) N=36,747	2,401.55 (9,107.55) N=7,133	0.813 (0.126) N=26,716	0.639 (0.161) N=6,428	0.779 (0.150) N=33,144	0.770 (0.151) N=6,049

Notes: Standard deviation in parentheses.

Table 2. Cost-Effectiveness Analysis (Private insured vs Uninsured)

Strategy	Cost ($)	Incremental Cost ($)	Effectiveness (QALY)	Incremental Effectiveness (QALY)	Incremental C/E Ratio (ICER)
No Insurance	23,440.86		22.64		
Private Insurance	82,325.10	58,884.24	23.57	0.93	$63,511.01/QALY

Table 3. Cost-Effectiveness Analysis (Public insured vs Uninsured)

Strategy	Cost ($)	Incremental Cost ($)	Effectiveness (QALY)	Incremental Effectiveness (QALY)	Incremental C/E Ratio (ICER)
No Insurance	23,440.86		22.64		
Public Insurance	135,113.95	111,673.09	21.10	-1.44	-$77,639.32/QALY

DISCUSSION

The ACA Medicaid expansion assumed that more people, especially low-income people, could easily access health care services and enjoy a better quality of life as well as reduce financial burdens[5]. People with poor health are more likely to get insurance to reduce their financial burden and receive health care benefits, which is the role of insurance, particularly in the era of the ACA.

From 2005 to 2016, the public insured spent the most on healthcare each year. The least group was the uninsured regardless of age group. Health spending increased at an accelerating rate with age in all groups (Table 1). More insured people use healthcare services and spend more on medical expenses after the ACA expansion as it is a policy that strengthens guarantees, as confirmed by many studies[6,7,8].

Prior analysis of 2000 MEPS data showed significantly lower PCS (beta=-5.8) and MCS (beta=-1.1) scores for uninsured subscribers[9]. SF-6D scores were the lowest for the public insured in our analysis which resulted from the lowest MCS and PCS score of the public insured among three insurance type. The lowest SF-6D score was 0.770 among private and non-insured, which is higher than the highest score of 0.783 for the public insured. The public insured in their mid-50s and mid-60s were even 0.667 points, failing to exceed 0.7 points (Table1). The lowest SF-6D scores of the public insured were due to the fact that many of the uninsured low-income population in the 2000 MEPS data were incorporated into public insurance through ACA Medicaid Expansion Policy.

Starting at the private insured age 25 and sending subjects through 39 interval to age 64, there would be discounted $82,325 health costs per person, and the average subjects would accrue 23.57 QALYs over the same cycles. The incremental cost and effectiveness compared to no-insurance had $58,884 and 0.93 QALY, which resulted in an ICER of $63,511 per QALY gained (Table 2). Discounted health costs, for the average 25-year-old public insured through age 64, would increase by $111,673 per person over the 39-year period compared to uninsured subjects. Surprisingly, the average 25-year-old public insurance policyholders would gain negative 1.44 QALY over the same period. As a result, public insurance subscribers had an ICER of negative $77,639 per QALY gained (Table 3). According to the negative ICER, the public insurance was unequivocally not cost-effective[10]. Positive incremental cost and negative incremental effect achieved poorer outcomes at higher cost.

The role of public insurance is to provide a social safety net for vulnerable demographic groups so it is natural that public insurance spending is far higher than private insurance. Moreover, the ACA expansion such as enhanced coverage will strengthen this phenomenon.

If we could eliminate or decrease the ineffective care or treatment to save our limited budget, private insurance subscribers will enjoy such effects as lower health insurance premiums and higher wages. However, public insured would simply move away from the social safety net. It is time for constant consideration on how to achieve financial sustainability and cost-effectiveness of health insurance, as the financial burden from medical spending will increase.

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