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The Business of Insurance: Demystifying Health Insurance Rates

In the last year, health insurance premiums and health insurer administrative costs have been under intense attack. To many, it seems the process to determine insurance rates is vague and mysterious. We explained the administrative cost issue in our papers “Medicare’s Hidden Administrative Costs: A Comparison of Medicare and the Private Sector,” and “How High Loss Ratios Undermine Affordable Health Insurance.” Given the attention, it is past time to explain the health insurance rate-making process.

The rate-making process is not all that mysterious. Mathematical experts called actuaries apply probability, statistics and risk theory to craft real-world premium rates. Insurance companies combine risks to create an average rate (usually called a community rate) but also modify those rates to reflect certain individual factors including demographics (region, age, gender, etc.) and underwriting (a person’s health status). Understanding the interplay of all these factors (pooling, demographics, and underwriting) is important to understanding health insurance premiums. Similar to the mortgage market, too many policymakers want to ignore economic realities to promote a perceived social good.

What drives health insurance prices? The largest expense for any health insurance company is the cost of health care. As health care costs continue to rise — sometimes by double digits — health insurance premiums also rise. These increases are driven by several factors including medical inflation (price increases), technology (new treatments or diagnostic tools i.e., using an MRI instead of an X-ray), and frequency (how often Americans seek medical care). Many of these changes can also be driven by external factors like an aging population, increasing obesity and other factors.

Insurers also have administrative expenses for services like the collection of premiums, paying sales agents, paying employees to process claims, and performing other administrative tasks. Insurers also pay taxes including premium taxes (which average about two percent of collected premium), and corporate income tax. Health insurers must also keep “reserves” — money invested in low-risk investments which is kept on hand to cover unexpectedly high claims to maintain solvency.

What determines the price of insurance? The first insurance policies were sold in Edward Lloyd’s coffeehouse in London, England, to cover the possible loss of a ship’s

cargo. (Lloyd’s coffeehouse became the center of the insurance world because it catered to the shipping industry with reliable shipping news.) Underwriters — the individuals taking on the risk of the insurance transaction — were able to set prices appropriate to the risk of the vessel based on the time of year, type of cargo, etc. In short, the cost of insurance is based on the risk of incurring a loss. Insurance for hurt feelings may be very expensive (because it is common), but alien abduction insurance might be very cheap (assuming the frequency is rare).

Insuring any one ship is risky — for example that ship could be attacked by pirates and sunk. The cost of the claim could financially wipe out the person taking on the risk. To solve this problem, insurers grouped, or pooled, the premiums of numerous ships so that those who experienced an insurable event (e.g., a pirate attack) were partially subsidized by those who didn’t. As the number of ships in the pool grew, expenses became more predictable and easier to spread across the entire group of ships. Modern health insurers do the same thing by pooling the risks of thousands of individuals.

Is everybody charged the same rate for insurance? The pricing of an insurance pool is based on the average risk — it assumes that the population in the pool matches that of the general population. But insurers face one major problem — some individuals will wait to buy insurance until after they need it because they can. This would be analogous to buying auto insurance after a car crash. This problem is known as “adverse selection.” Identification and actuarial analysis of factors such as age, geographic location, health status and lifestyle choices, permit insurance carriers to accurately charge appropriate, and generally lower, prices for health insurance coverage. Insurers, with oversight from the state regulators, have to find the appropriate balance of weighing such factors so that the potential insured finds it attractive enough to purchase, allows for enough money collected to cover claims, and provides affordable coverage for all segments of the population.

The result is that the average insurance rate is adjusted to reflect certain demographic characteristics. Individuals who are the same age but in different regions will pay different insurance rates that reflect the cost of health care in their region. Similarly, individuals living in the same region but different ages may pay different rates as well.

What is underwriting? Underwriting is the process of assessing the individual's (or group's) risk and adjusting the premium to reflect that risk. A home located very close to a river is more likely to flood, a driver who has been

caught speeding is more likely to have an accident, and someone with a pre-existing condition is more likely to have some health insurance claims. The level of risk varies among people, and the price of insurance to some degree should reflect the difference.

Understanding Pooling

If you were to take a random sample of individuals on the street, it is likely their medical expenses would vary greatly and your average expenses would fluctuate wildly. But as you increase your sample size (say from groups of 10 people to groups of 100 and finally to groups of 100,000), the average expenses would become more and more predictable. In order to demonstrate pooling our actuaries helped create the claim cost distribution example below. This table shows that a sample pool of 100,000 people are expected to incur average annual health care costs of \$4,331.63. Inside that figure, each individual's health care cost may vary widely, but across the population, the result is predictable.

Average Annual Claim Amount	Probability (Frequency)	Number of People	Total Claims Paid
\$0	.075	7,500	\$0
\$175	.285	28,500	\$4,987,500
\$675	.15	15,000	\$10,125,000
\$1,350	.16	16,000	\$21,600,000
\$3,050	.15	15,000	\$45,750,000
\$6,750	.08	8,000	\$45,000,000
\$13,500	.06	6,000	\$81,000,000
\$30,500	.027	2,700	\$82,350,000
\$67,500	.008	800	\$54,000,000
\$158,700	.005	500	\$79,350,000
\$4,331.63	1.0	100,000	\$433,162,500

Source: CAHI Actuarial Working Group

An individual's premium will not necessarily equal \$4,331.63. In addition to covering claim costs, insurers must add administrative expenses (like claims processing expenses, premium collection expenses, agent commissions, etc.). And the individual's premium will be adjusted down and up depending on the impact of their regional costs, demographics, and any underwriting adjustment.

Underwriting is not about punishing those with medical conditions. Premiums are adjusted to find a pricing structure that ensures both the low and high risks see the coverage as a reasonable value. This ensures the pool will not be populated by a disproportionate number of high-cost people. Our book, *Destroying Insurance Markets: How Guaranteed Issue and Community Rating Destroyed the Individual Health Insurance Market in Eight States*, showed that state experience with modified community rating and guaranteed issue lead many of the healthy drop coverage when their prices rise. This in turn leads to even further price hikes (because the pool has even fewer healthy individuals), and a market that becomes unaffordable.

Conclusion

Frankly, we're concerned. The mortgage market imploded because government policy manipulated mortgage pricing and risk assessment. The Patient Protection and Affordable Care Act (PPACA) will do the same to the insurance market. The result will be health coverage that is expensive for everyone — the sick and the healthy alike. This, in turn, complicates the health care system with politicians trying to further "fix" the problem without understanding the true cost of coverage and how health insurance rates are actually determined. And as the situation worsens, politicians will turn to even more invasive government programs.

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