

## RESEARCH BRIEF

# Getting Subsidies Right

## Estimating Equilibrium in Health Insurance Exchanges: Price Competition and Subsidy Design under the ACA

Based on BFI Working Paper No. 2017-05, "[Estimating Equilibrium in Health Insurance Exchanges: Price Competition and Subsidy Design under the ACA](#)," by Pietro Tebaldi, assistant professor of economics at the University of Chicago

### KEY TAKEAWAYS

- ✓ Young people are less willing to pay for health insurance than older people
- ✓ Subsidized premiums under the ACA vary by income, not by age
- ✓ Important to subsidize youth more to increase their participation
- ✓ The result is more participation and lower costs

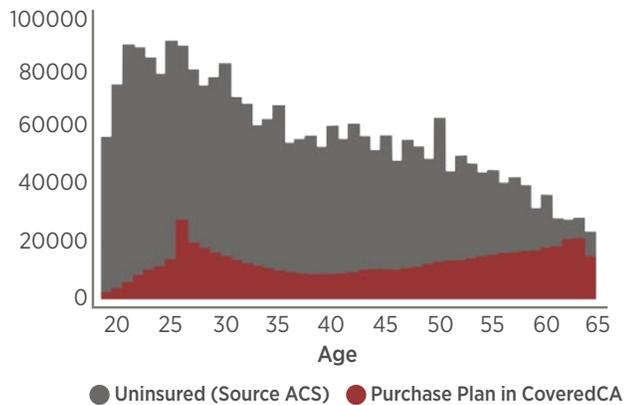
One of the primary challenges of the Patient Protection and Affordable Care Act of 2010 (ACA) was to encourage enrollment of the relatively young and healthy. These so-called “young invincibles” were key to the success of the plan because, being relatively healthy, their participation would help pay for the services of older enrollees who, on average, consume more medical care.

The young invincibles, though, had other ideas. Many opted not to purchase coverage, as they were unwilling to pay their premiums. This was the case despite that such premiums are subsidized (through advanced tax credits), and despite the risk of facing tax penalties if uninsured for more than nine months over the calendar year. This resulted in an older, riskier pool than insurers expected, and many point to this as one important cause of insurers leaving the market and premiums increasing over time.

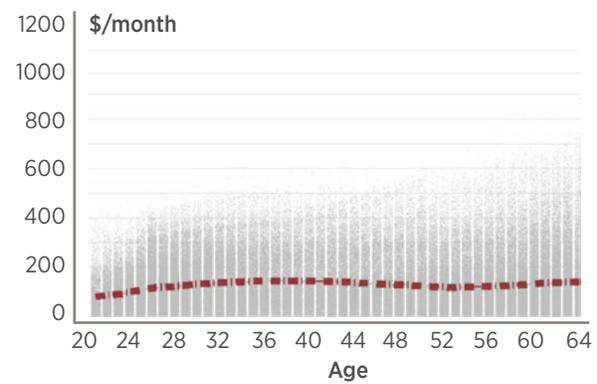
For some observers, this suggested that the tax penalty (mandate) for the uninsured was too low. Raise the stakes, they argued, and more young people would sign up. However, penalizing people for not purchasing something they do not want proves to be politically difficult. Recent research by Pietro Tebaldi, assistant professor of economics at the University of Chicago (“[Estimating Equilibrium in Health Insurance Exchanges: Price Competition and Subsidy Design under the ACA](#),” August 2017), suggests a different solution to this problem: Rather than punishing the young for not joining the program, subsidize them more to encourage their participation.

## Relatively Older Buyers Are More Willing to Pay for Health Insurance

Uninsured and Covered CA Purchases for Single Adults



Monthly Premium Paid by Single, Subsidized Buyers



This rather intuitive solution would not only raise participation among the young, but in doing so would reduce premiums for older participants and raise enough revenues to reduce the overall cost of the program. How would these subsidies to the young be paid? By reducing the subsidies for older participants—at no cost to them. Since the premiums of older participants would fall due to increased participation among the young, those older participants would need smaller subsidies.

Although this is a theoretical possibility, which may or may not apply to different states, real-world observation from one of the largest states finds it plausible. Using data provided by the California ACA marketplace, Tebaldi developed a model that captures the broad dispersion in consumer preferences and medical cost. His results suggest that there are subsidy levels at which young invincibles would enter the market in greater numbers; in addition, premiums would decrease sufficiently to ensure that all buyers are better off, and average subsidies would also decrease.

Of course, there is more to consider than subsidies when crafting an efficient government-sponsored health insurance market, but getting subsidies wrong can have an outsized impact on the long-run success of these programs. At a time when Congress and policymakers are considering changes to existing health care delivery programs, they need to get this crucial element right. Tebaldi's analysis on subsidies and their impact on consumer participation and insurers' costs can provide an important starting point.

## Discussion and Contributions

Under the ACA, the federal government spent approximately \$40 billion annually between 2014-16 to provide discounts on health insurance premiums to more

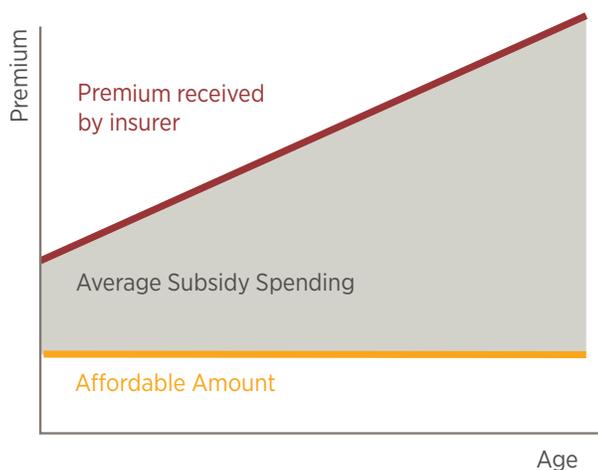
than 10 million US citizens. With so many people with distinct preferences demanding a share of a restricted supply of funds, regardless of how large, there are plenty of opportunities for misallocation. So, understanding the relationship between subsidy design and outcomes is critical, both to evaluate the ACA and perhaps to reform it, and to design new programs.

ACA-regulated marketplaces provide valuable insight into three important features of health insurance markets: demand from subsidized households, insurers' price competition, and adverse selection generated by the correlation between willingness-to-pay and expected health cost. The number of those who enroll is not only shaped by the size of the subsidy, but by particular consumer needs and preferences. On the payer side, insurers must react to changes in demand and the composition of enrollment pools. Together, these incentives and choices make outcomes difficult to project.

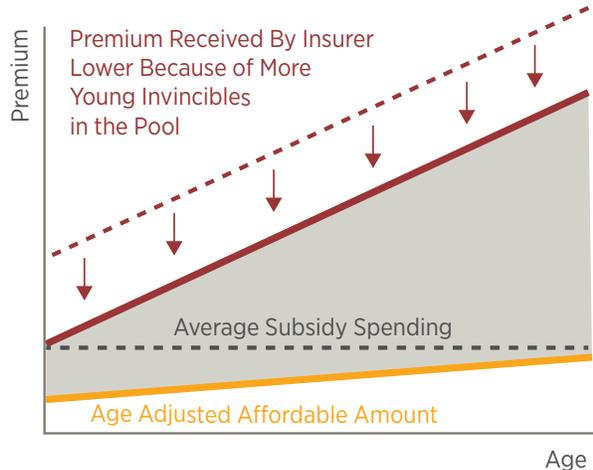
Tebaldi used data on individual-level enrollment and plan-level claims from the first year of the California ACA marketplace (2014), where over 90 percent of the 1.3 million buyers received federal subsidies. Tebaldi identified and estimated demand and cost, incorporating details of the regulatory environment and variation in the composition of buyers across different contracts. He used these estimates as inputs to develop a model of insurers' competition customized to ACA rating regulations. This allowed him to study equilibrium pricing under different subsidy designs, comparing prices, enrollment, markups, and public spending.

Tebaldi's results reveal that the current subsidy scheme under the ACA can be improved in ways that are quantitatively significant and consistent with simple economics. His alternatives emphasize the importance of increasing incentives for young and healthy buyers

**Affordable Amount Equal for Young and Old**



**Lower Affordable Amount for Young Uninsured**



to participate, hence lowering average costs, prices, and public spending.

Tebaldi makes three contributions that lead to his suggestions for how to improve the design of the subsidy program:

**Contribution 1:** The large dataset from California’s ACA exchange allows Tebaldi to estimate demand for coverage among low-income uninsured. These participants, living in the same geographic market, face identical choices but different premiums according to ACA rules on how rates may vary by age, income, or household size.

Among his findings, Tebaldi estimates that households under 50 are, on average, twice as price sensitive as older participants (50-64). However, there is still a large dispersion within each group; for example, a reduction in the subsidy of \$100 is enough to drive enrollment differences between the two groups. Such differences are important considerations for insurers who need to project expected costs. Supporting his results, the estimates from Tebaldi’s model align closely with similar estimates from the pre-ACA health insurance exchange in Massachusetts (see, e.g., Chan and Gruber, Ericson and Starc, Finkelstein, Hendren, Shepard).

**Contribution 2:** By combining the enrollment data and his demand model with aggregate claims information, Tebaldi is able to estimate insurers’ costs. He identifies

cost differences among buyers by projecting average claims of enrollment pools in terms of demographics and participants’ willingness to pay.

Tebaldi finds a strong relationship between expected cost, household characteristics, and willingness to pay for coverage. For example, a 10-year increase in a buyer’s age leads to a 20 percent increase in expected cost. Even conditioning on age, going from the bottom 20 percent to the top 20 percent of the distribution of willingness-to-pay corresponds to a 25 percent increase in expected cost. By combining observed data, preferences, and costs, Tebaldi is able to describe adverse selection in this market. Simply put, Tebaldi finds a strong correlation between the probability of purchase and cost when controlling for age, income, household size, and geographic region.

**Contribution 3:** With an enriched understanding of consumer preferences and insurers’ cost considerations, Tebaldi compares premiums, coverage, and spending under different subsidy designs. His key result reveals that a policy change that reduces subsidies to older buyers and increases them for young invincibles can make all buyers better off, increase profits, reduce per-person subsidies, and all with a limited increase of total government spending. Shifting subsidies from high-cost, high-demand groups to low-cost, low-demand groups puts downward pressure on equilibrium prices and increases quantity purchased for all groups, while also reducing average public spending. These lower prices mean that older buyers, whose subsidies will decrease, will not be made worse off because they will also face lower net-of-subsidy premiums.

For example, lowering subsidies for over-50 households by \$25/month and increasing subsidies for under-50 households by \$50/month increases total enrollment by 13 percent (+149,000), and consumer surplus by 15 percent

Higher subsidies for young uninsured can benefit government-sponsored health insurance markets.

(+\$492 million), while average cost decreases by 9 percent (-\$315/year), and per-enrollee public spending by 10 percent (-\$307/year). Similar cost savings hold over a wide range of variations in monthly subsidies.

Importantly, while the economic mechanism is simple, and likely to hold across different contexts, the specific numbers are not to be taken literally. Indeed, one important caveat to Tebaldi's analysis is the several data limitations that many researchers face in this area of work. Insurers and regulators restrict access to data, owing in part to privacy considerations, and in part to protect industrial secrets. Therefore, the authors' empirical findings are necessarily limited in scope. However, the machinery of the model and the underlying economics would apply to datasets possessed by state policymakers, which they could use in their specific context to study how different designs of the subsidies would pay out.

### CLOSING TAKEAWAY

At a time when Congress and policymakers are considering changes to existing health care delivery programs, they need to get this crucial element right.

## Policy Implications

This paper offers a simple improvement to the determination of subsidy levels within government-sponsored health insurance programs. Existing subsidy levels that are weighted toward older participants discourage the enrollment of young invincibles, raising costs and leaving many low-income citizens without insurance. At a minimum, efforts to reform the existing ACA or to design new programs should consider the evidence from Tebaldi's research. Getting subsidies right is the first step in designing a government-sponsored health insurance program that insures the most people at the least cost.

That said, Tebaldi recognizes the need for additional data and the limitation of his analysis, including the need to incorporate other features of health insurance markets, such as insurers entry and exit, the role of risk-adjustment, and the setting of provider networks and price negotiations between hospitals and insurers, as well as buyers' inertia and switching costs when re-enrolling over multiple years. There is clearly room for further research.

Tebaldi stresses that any policy implications from his work should be viewed as short-run and within the current institutional environment. Additionally, his findings apply less to exchanges in which insurers set contracts freely, or in which there is continued uncertainty about participating carriers, demand, and cost. In these cases, new models are needed.

But first things first. Almost by definition, government-sponsored plans involve subsidies, and getting those subsidies right is the first step in designing an efficient program. This is especially true in the complicated health care market, where consumer preferences weigh against insurers' incentives, and where all are subject to limited government budgets.

## Research Background/Methodology

To study government-sponsored health plans, Tebaldi used data on individual-level enrollment and plan-level claims from the first year of the Californian ACA marketplace, where 90 percent of the 1.3 million buyers received federal subsidies. These data allowed him to compare different subsidy designs while taking account of pricing incentives and market power of imperfectly competitive insurers who must react to changes in demand, as well as changes in expected cost driven by differences in the composition of enrollment pools.

Tebaldi estimated demand and cost curves exploiting details of the regulatory environment and variation in the composition of buyers across different contracts. He used those estimates as inputs to inform a model of insurers' competition customized to ACA rating regulations. Within that framework, Tebaldi studied equilibrium pricing under different subsidy designs, comparing prices, enrollment, markups, and public spending.

### READ THE WORKING PAPER

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[bfi.uchicago.edu/Tebaldi-WP-201705](http://bfi.uchicago.edu/Tebaldi-WP-201705)

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