PENN WHARTON
UNIVERSITY of PENNSYLVANIA
Budget Model

Summary: We present the macroeconomic and demographic effects of a stylized mandatory single-payer healthcare system ("Medicare for All" or "M4A") system under three different financing mechanisms: premiums, payroll, and deficits. While all three choices improve longevity, worker health and population size, the financing mechanism is critical for determining the size of the policy effects on the economy.

Key Points

- We analyze a stylized mandatory single payer system ("Medicare for All" or "M4A") system that provides the same benefits currently available under Medicare to the working-age population. This brief lays the foundation for future analysis of plans that expand Medicare benefits and coverage while also seeking additional cost savings.

- We project that under current law, the percent of the population without medical insurance will more than double over the next 40 years, growing from around 10 percent today to over 27 percent by 2060.

- We project that a shift to a mandatory single-payer system (Medicare for All) increases life expectancy by almost 2 years, grows the population size by 3 percent, and increases worker productivity through improved health, before macroeconomic feedback effects.

- The choice of funding mechanism, however, is critical for macroeconomic performance. We project that financing M4A with a _premium_ that is independent of a worker's labor income would increase GDP by about 16 percent by 2060 through a combination of cost savings and productivity increases. In contrast, financing M4A with a new _payroll tax_ that is proportional to a worker's labor income would reduce GDP by roughly 3 percent, whereas _deficit_ financing would reduce GDP by almost 15 percent by 2060.

Medicare for All: Comparison of Financing Options

Introduction

This brief presents a new model we use to estimate the impact of Medicare for All ("M4A") on demographics and economic variables. The model is rich in detail while remaining internally consistent between micro-economic decisions, demographics and macroeconomic outcomes. These interactions allow the model to

produce complex relationships found in the data, including mutually reinforcing health-income interactions that produce "health deserts" of uninsured people who do not qualify for Medicaid. Without reform, we project that the population without medical care will more than double by 2060.

In contrast to some existing policy proposals, we consider a "pure" M4A proposal, a stylized plan that simply extends existing Medicare benefits to workers as a mandatory replacement of the employer-based system. This model outlined herein lays the foundation for our follow-on analyses of specific plans that call for expanded benefits and other changes.

By 2060, we project that M4A improves life expectancy by 1.8 years, grows the population size by almost 3 percent. M4A also increases worker productivity through improved health, before macroeconomic feedback effects.

However, the macroeconomic performance depends critically on how M4A is financed. We project that financing M4A with a _premium_ that is independent of a worker's labor income would _grow_ the economy by almost 16 percent by 2060 through a combination of cost savings and productivity increases. In contrast, financing M4A with a new _payroll tax_ that is proportional to a worker's labor income would _shrink_ the economy by roughly 3 percent, whereas _deficit_ financing would _shrink_ the economy by almost 15 percent by 2060.

Model Overview

We briefly summarize the key elements of the model here. Additional details are available in our technical presentation.

The household sector in our model contains a wide range of various family units (single, married with zero or more children) that vary in ages, assets, income, "health state" (i.e., a health score) and insurance status. Each household faces uncertainty about their future health state, expenses within each health state, future wages and mortality. Under current law, households must make a decision each year over several variables: (i) how much to work (if at all); (ii) whether to purchase insurance (often subsidized by employer); (iii) whether to pay out-of-pocket expenses in response to a health cost in order to receive medical care (either at low values if covered by insurance or at higher values if uninsured); and, (iv) how much income to enjoy today on non-health consumption versus save toward future consumption and leisure.

A household's productivity and health state interact. For the same level of intrinsic productivity (e.g., education), a healthier household will earn more in the labor market than a less healthy household. A household that does not receive medical care when needed increases its chance of being in a worse future health state (and potentially dying). This chance increases nonlinearly with the cost of foregone medical care. In other words, failing to receive costly medical care is substantially more risky than failing to receive less costly care.

The production sector is characterized by firms who sell into competitive product markets using inputs (workers and capital) that they must compensate facing competition from other firms for these factors of production. For workers, that compensation takes the form of wages and subsidized health insurance (with firms paying about 77.5 percent of the insurance premium on average).[1] Health insurance premiums are fully tax exempt (through employer deduction and employee exclusion from taxable income), the value of which is generally captured by workers as lower taxable compensation due to competitive labor markets. However, firms face real wage rigidity: if a worker's total value ("marginal product") falls below approximately $13,000

(the minimum wage) the household is compensated only with wages. The worker can still purchase insurance but the value of the tax exemption is, therefore, lost.

The government sector collects revenue from an array of different tax instruments to finance its operations, provides Social Security benefits and two forms of medical care: Medicaid (based on income and assets) and Medicare (based on retirement). These programs are financed in a manner consistent with current law. Medicaid is cost-shared between federal and state governments.[2] Medicare costs are financed by premiums on retirees as well as general revenue transfers. Minimum household consumption is guaranteed through SNAP (food stamps).

Private insurers are competitive. For workers, premiums are calculated to produce a competitive level of profits for the given risk pool based on workers who select insurance and their utilization. Insurers generally can't perform individual-specific medical underwriting in employer-based plans, and so premium prices reflect this pooling. Overhead costs are about 6 percent per year higher for private payers than for Medicare.[3] Private payers also face higher cost growth than Medicare, as shown in Figure 1 , which adopts Congressional Budget Office (CBO) assumptions.[4]

Figure 1. Excess Cost Growth

Annual Growth Rate (in percent)

DOWNLOAD DATA
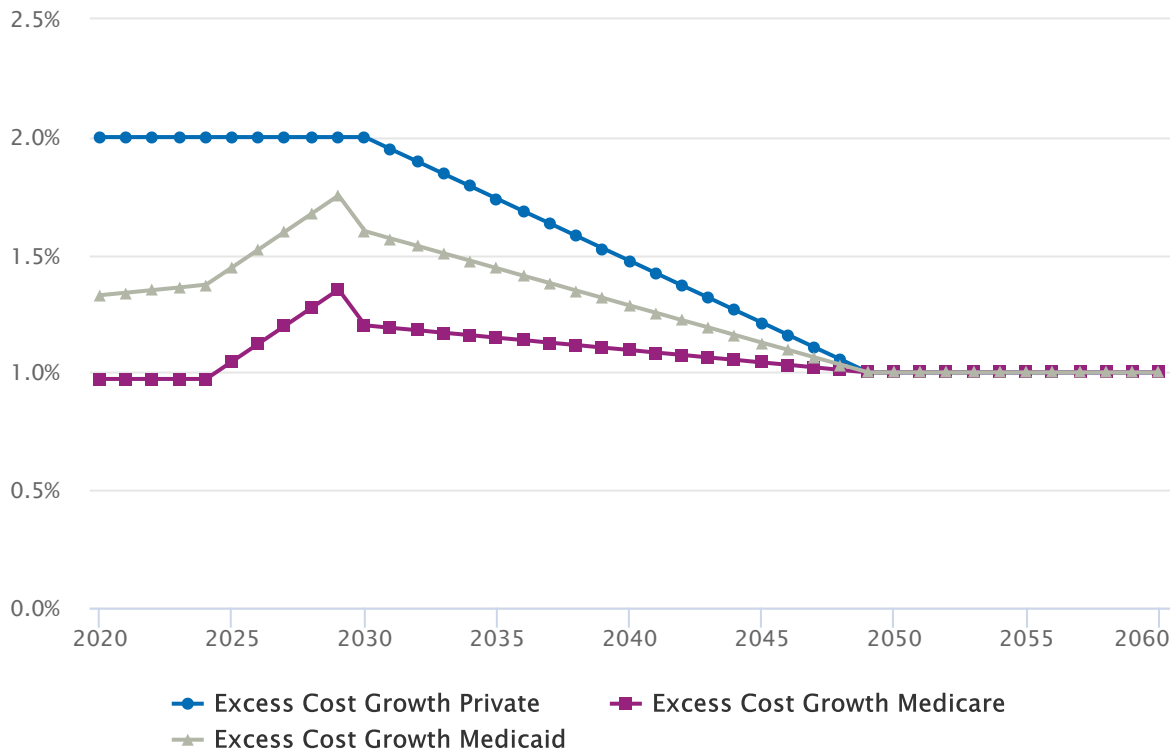
As discussed in our technical presentation, our model "calibrates" to numerous microeconomic and macroeconomic targets. Additional "overidentification" relationships are used to compare model outcomes with real-world data, and the model matches up very well without ad-hoc adjustments.

Complex Dynamics

Our integrated model produces realistic dynamics that have not been captured in existing models. Existing models usually take one of two forms. One set of existing models focus on a single sector such as healthcare but take premium values as given, thereby not including adverse selection and moral hazard effects. These models also often lack integration with other household-level decisions, macroeconomic variables and other government programs, like Medicaid, Social Security and SNAP, all of which impact the decision to buy insurance. Or, existing models are macroeconomic in nature and treat the healthcare sector as just another spending program--and thus cannot model actual policy changes to healthcare.

For example, the relationship between income and health is bi-directional in our model. Under current law, a household with low income (maybe from a non-health-related labor market shock) might lose health benefits if they do not qualify for Medicaid. Those households, therefore, are "caught in the middle" and lack affordable medical care, producing "healthcare deserts." Low income and poor health mutually reinforce, at least, until the household becomes sufficiently poor in income and assets to qualify for Medicaid.

At the same time, healthier young households under current law might choose to "adversely select" themselves out of the pooled private insurance market that is expensive for their own individual health "type" (current health state and probability of moving to a bad state in the near future), even when premiums are heavily subsidized by their employer and are tax preferred.

Putting these pieces together, the uninsured can be bifurcated in costs. One group is younger and healthy; extending coverage to them is relatively cheap. Another group is sicker and lower income; extending coverage to them is not cheap, although some costs are recouped over many years after new coverage increases their productivity, adding to the tax base.

The availability of Medicaid and Medicare also materially impacts household decision-making, especially for asset accumulation. Medicare reduces saving for medical costs during retirement. Medicaid encourages households with low non-housing assets to further reduce their non-housing assets to qualify for Medicaid, even though this spend-down produces less smooth consumption over time.[5]

Powerful interactions also exist with the existing Social Security and tax systems. Given competitive labor markets, replacing employer-based health benefits with M4A raises worker wages by the pre-tax amount of employer-subsidized health benefits under current law. M4A also expands the tax base by removing the (employer and employee) exemption of health benefits. Income and payroll tax bases, therefore, are expanded, raising tax revenue by as much as 35 percent for income taxes by 2060 and by about 40 percent for payroll taxes, due to higher reported wages and larger macroeconomic effects. Social Security benefits also increase (by as much as 12 percent by 2060), which, in turn, impacts household saving for retirement.

Limitations

Our integrated model takes advantages of modern theoretical advances and computing methods to solve a complex, interactive system. Like all models, choices have to be made about what to include. We, therefore did not include some model complexities where their inclusion would not likely materially impact the comparison between different financing mechanisms to pay for M4A. We list these exclusions here:

First, the model does not include potential rigidities in the supply expansion of healthcare services, including short-term physical capital supply constraints (e.g., adding more hospital beds) as well as longer-term labor supply constraints on entry to medical schools and post-medical school residency programs and fellowships. Such supply constraints should produce similar "waiting times" for expanded care under any financing mechanism. However, in an analysis of a specific policy change *relative to current law*, our analysis, would,

therefore, paint a slightly optimistic view of adoption of M4A. In that case, we would expect that any legislation would also work to address these constraints.

Second, the "health state" in our model is based on an overall health score that does not further differentiate by diagnosis. For example, two people could have equal health scores, where one is due to cardiovascular disease and another is due to compromised kidney functioning. The latter diagnosis might have more persistent costs over time than the former, and our health state probabilistic process captures only the average weighted score across all diagnoses within a health state and age. In practice, however, the combination of health state and age are generally good proxies for diagnosis heterogeneity. Moreover, our focus is not at the treatment level but at a level of health that is more aggregated. Any limitations from this aggregation would not be material across different funding mechanisms that expanded coverage.

Third, there is no distinction by race that is not already proxied by factors such as income and wealth. However, in reality, blacks are more likely to have a shorter life expectancy than whites, even controlling for income and wealth. Including racial differences would only affect our comparisons if the funding mechanisms were differentiated by factors that correlated with race, such as geography, which is not the case in the funding mechanisms we analyze.

Fourth, we do not differentiate our analysis by region. In reality, the healthcare and insurance industries are likely to be less competitive in some parts of the country than others. Different funding mechanisms that we consider herein do not differentiate by region. We suspect that actual legislation relative to current law might also address and increase provider competition.

Fifth, the empirical literature is unclear in terms of quality differences between traditional Medicare (fee-for-service) and Medicare Advantage (MA). As such, we do not model these differences under current law, instead assuming that Medicare overhead reflects a weighted (by usage) combination of these two programs. We also do not include some smaller government healthcare programs, including healthcare provided through Veterans Affairs ($73 billion in 2019)[6] and healthcare for active-duty military families ($54 billion in 2019).[7] While we do not break out subsidies for insurance purchased on the Affordable Care Act (ACA) exchanges ($62 billion in 2019),[8] a large part of our population is on Medicaid. Moreover, most of the increase in the uninsurance rate reported later comes from working households who forgo a 77.5 percent employer match without any compensating increase in wages. We also do not model the "Cadillac tax" and other ACA taxes given their recent repeal.

Current Law ("Baseline")

As shown in Figure 2, we project that the percent of the population without health insurance (either Medicaid, private, or Medicare) will increase from about 10 percent today to over 27 percent by 2060. Figure 2 (Percent of Population without Health Insurance), we project that the percent of the population without health insurance (either Medicaid, private, or Medicare) will increase from about 10 percent today to over 27 percent by 2060. Figure 2 (Population that foregoes medical treatment) shows that the share of the population that does not receive medical treatment (whether insured or paying out-of-pocket) will almost triple during this same time period, from around 4.5 percent today[9] to 12.3 percent in 40 years. This strong increase is partly driven by increases in excess cost growth in the private system, as shown earlier.
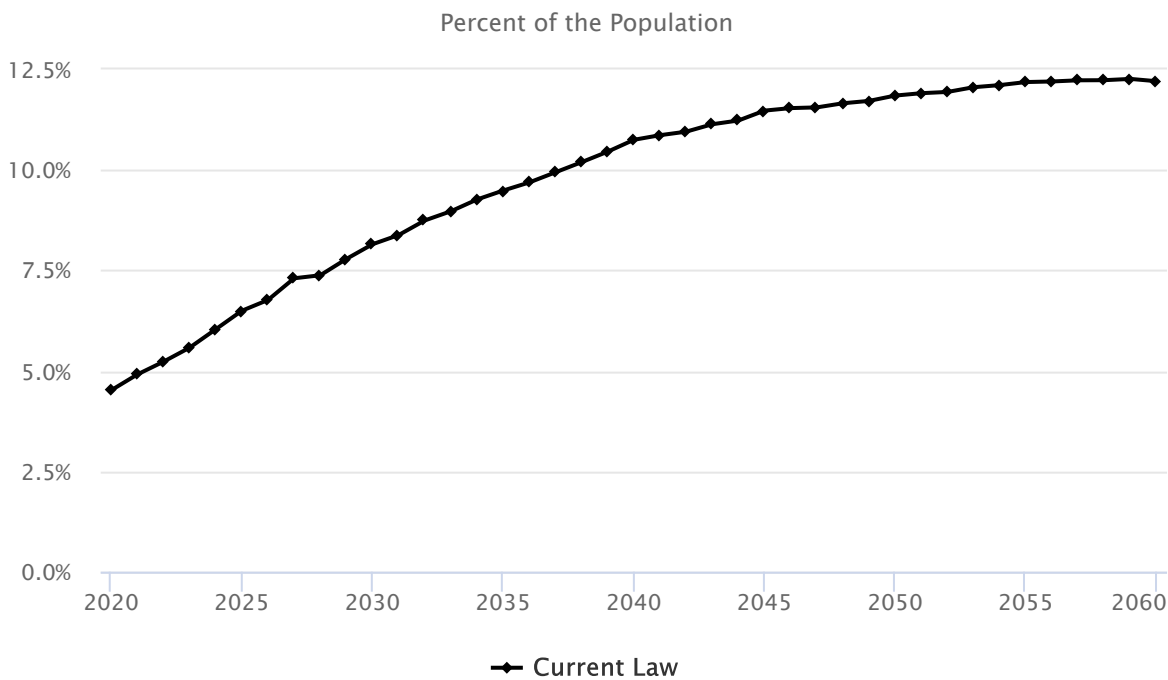
Figure 2. Current Law

DOWNLOAD DATA

◉ Percent of Population without Health Insurance
◯ Population that foregoes medical treatment

Percent of Population without Health Insurance

Percent of the Population

—◆— Current Law

Population that foregoes medical treatment

Percent of the Population
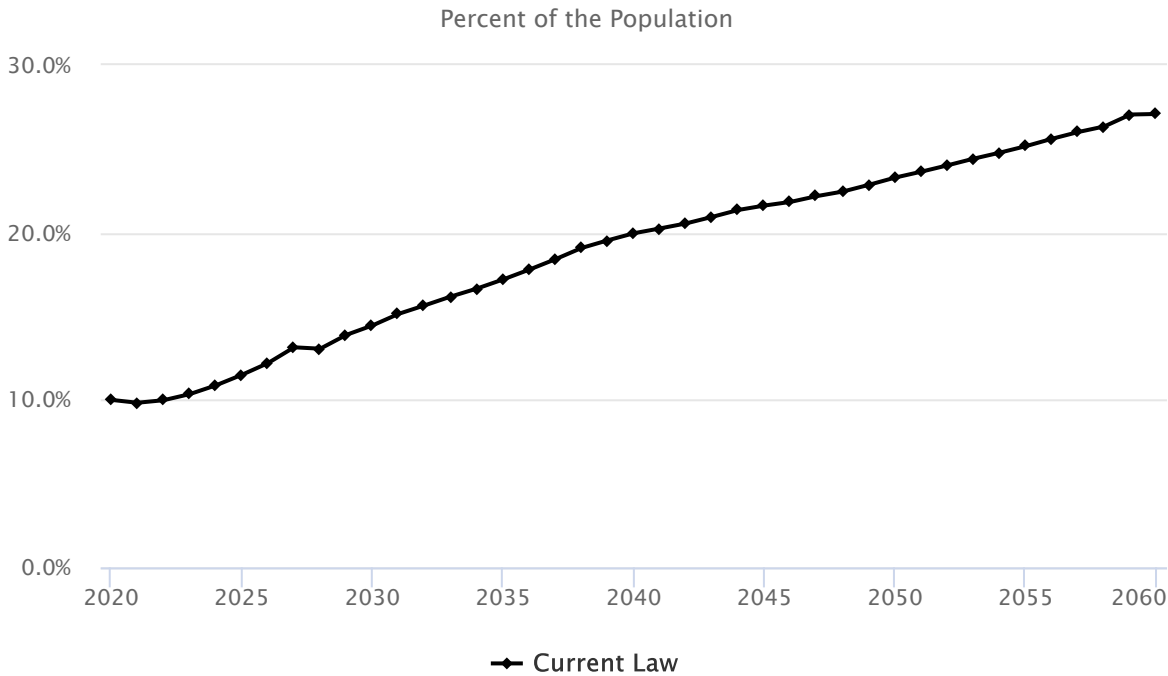
—◆— Current Law

At first glance, this increase under current law seems implausibly large, as it appears that the ACA exchanges have worked to stabilize the uninsured rate in recent years. Moreover, many employers have introduced ACA-compliant health benefit offerings that attempt to reduce moral hazard (over-utilization), such as through

high-deductible plans. However, our view is that these changes constitute one-time "level" effects rather than "slope" effects. Our view is buttressed by the recent repeal of the ACA individual penalties for remaining uninsured, combined with recent steep premium increases and greater employer reluctance to offer high-deductible-only plans. Slope effects would require future excess cost growth rates to fall below CBO projections or legislative changes such as a mandate (or taxes) for non-participation.

In our model, adverse selection snowballs over time, with healthier workers dropping their coverage as prices increase. These drops occur despite (i) insurance being heavily subsidized by employers (by 77.5 percent on average); (ii) benefits being delivered pre-tax; and (iii) workers who selectively drop their coverage not receiving corresponding wage increases under current law.[10] These drops by the healthier part of the pool, therefore, endogenously raise premiums *faster than* static excess cost growth projections shown in Figure 1, resulting in a mini "price spiral" over time. We project that health insurance premiums will increase by about 90 percent under current law over the next 40 years even *after removing the effects of both inflation and real economic growth* in order to hold fixed the *real purchasing power* of workers.

Stylized Policy Changes

This brief considers a stylized expansion of the existing Medicare system that replaces the current employer-based system for workers on a mandatory basis. We focus on differences in funding mechanisms in a new system that takes advantage of Medicare's lower overhead costs and slower excess cost growth, while making the fewest number of other changes. Accordingly:

Firms: Employer-side health insurance is fully replaced with mandatory M4A. Because labor compensation is competitive, worker wages increase immediately by the pre-tax value of the employer-share of benefits previously provided. The tax exemption (employer deduction and employee exclusion) of employer-based insurance premiums is also removed, which expands the size of the payroll and income tax bases even more, as reviewed below.

Medicare: Medicare's current benefits are not changed, and the Medicare Advantage (MA) option is maintained. Medicaid is also preserved in its current form. Physicians continue to be reimbursed at current Medicare rates for retirees; for workers, physician reimbursement rates are phased-down slowly over time, starting at current private-payer reimbursement rates but grown at only the lower Medicare cost growth rate over time. Relative to the dual physician payment system under current law, M4A reimbursements for the medical procedures on workers, therefore, become less generous over time.

Financing: This dual reimbursement is combined with dual financing: retirees continue to pay the same premium as under the current Medicare system, which is less than the value of the benefits they received, with the difference being financed with general revenue transfers. In all three funding scenarios we consider, workers pay the same premiums as retirees. However, barring additional deficits, workers also pay an additional premium or payroll taxes to fully cover their benefits. More specifically, we consider three funding options:

- Premium financing: each worker pays the same amount regardless of age, health risk profile (existing medical condition) or income. Reductions in labor income do not reduce the premium owed, hence, making it more similar to an insurance premium rather than a tax on labor income. However, unlike retirees, these premiums are not subsidized by general revenue. As a result, the average worker pays about three times the amount as the average retiree. For workers who cannot afford the premium, the costs are absorbed by a combination of Medicaid and SNAP.[11]

- Payroll tax financing: M4A is financed using a new proportional (linear) payroll tax. The tax rate does not depend on age or health risk profile; however, a worker with higher labor income pays a larger absolute amount, making the financing more progressive. Unlike the premium, that payment can be reduced by working less, discouraging work. The choice between premiums and payroll taxes, therefore, reflects the classic equity-efficiency tradeoff in public policy: more progressive policies are more likely to discourage economic activity.

- Deficit financing: If worker M4A benefits are instead financed with deficits, then the costs of greater debt largely fall on current and future workers. Larger debt levels reduce private sector investment, as a larger portion of household savings and international capital flows are redirected to financing current consumption rather than investment for future returns.

In contrast to the stylized policy change design herein, Senate Bill S.1129 introduced by Senator Sanders would expand Medicare benefits and also reduce physician reimbursement payments for worker healthcare at a faster rate than we consider herein. We model those changes in our analysis of that bill.

Projections: Health and Demographic

As shown in Table 1, we project that a move to M4A would increase worker health, mostly by expanding coverage. By 2060, the percent of the population that is uninsured falls from 27.1 percent to zero. The percent of the population not receiving medical care falls from 12.3 percent under current law to less than 1 percent under the different policy runs. This latter share does not drop all the way to zero because some households will rationally choose to avoid paying Medicare out-of-pocket expenses even after they are insured under M4A.[12]

Table 1. Effects on Health in 2060

DOWNLOAD DATA

Financing Option	Uninsured	Population not Receiving Medical Treatment	Population in the Sickest Health States	Increase in Productivity
Current Law	27.1%	12.3%	14.5%	n/a
Premium	0.0%	0.5%	13.3%	3.6%
Payroll	0.0%	0.7%	13.2%	7.2%
Deficit	0.0%	0.6%	13.3%	7.6%

Note: The effects of health on productivity are calculated as a percentage change from current law.

Moreover, the share of the sickest population drops from 14.5 percent to 13.3 percent.[13] Even before the introduction M4A, the sickest share of the population tends to be older and already covered by Medicare under current law. The adoption of M4A, therefore, mainly impacts workers, including "moderately sick" workers under current law. Worker productivity (wages) increase before macroeconomic effects (discussed below), due to greater health-induced productivity. Table 2 shows that M4A increases life expectancy by almost 2 years while increasing the size of the population by almost 3 percent.

Table 2. Effects on Longevity and the Population in 2060

Financing Option	Change in Life Expectancy (years)	Change in Population Size (%)
Premium	1.8	2.9
Payroll	1.8	2.9
Deficit	1.8	2.9

Figure 3 shows the projected share of the population that do not receive medical treatment over time, in both current law ("baseline") and under different M4A funding mechanisms. Households "forego" medical treatment usually because they are uninsured and do not want to pay out of pocket; in some cases, insured workers or retirees refuse to pay out-of-pocket costs despite their lower costs relative to those of the uninsured.

Figure 3. Population that Foregoes Medical Treatment

Percent of the Population
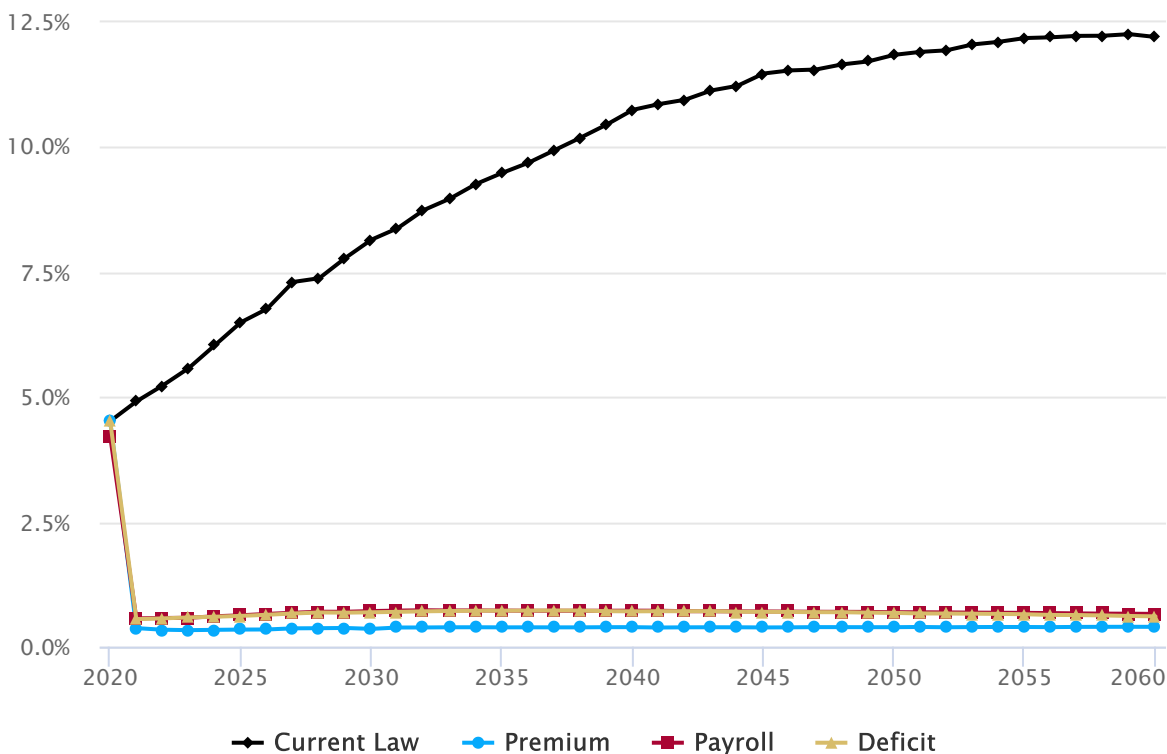
Figure 4 shows the change in insured health spending over time relative to current law. (To focus on the model dynamics, this figure does not include non-insured health spending, including over-the-counter medications and other spending categories not currently covered by employer-based insurance.) Spending increases in the very short run by adding uncovered workers but quickly falls due to cost advantages (lower

overhead and excess cost growth rates) in Medicare relative to private payers. However, by around 2038, we project that total costs exceed current law due to three factors: First, as noted earlier, we project that a larger share of the population would otherwise forego medical treatment over time under current law. So, covering them again becomes more costly relative to current law. Second, consistent with Figure 1 shown above, the excess cost growth advantages begin to fall, with Medicare's main remaining advantage being its lower overhead costs. Third, because the population is healthier and longevity is improved, the size of the population served by the M4A program expands over time.

Figure 4. Change in Total Health Spending

Percent Difference from Current Law

DOWNLOAD DATA
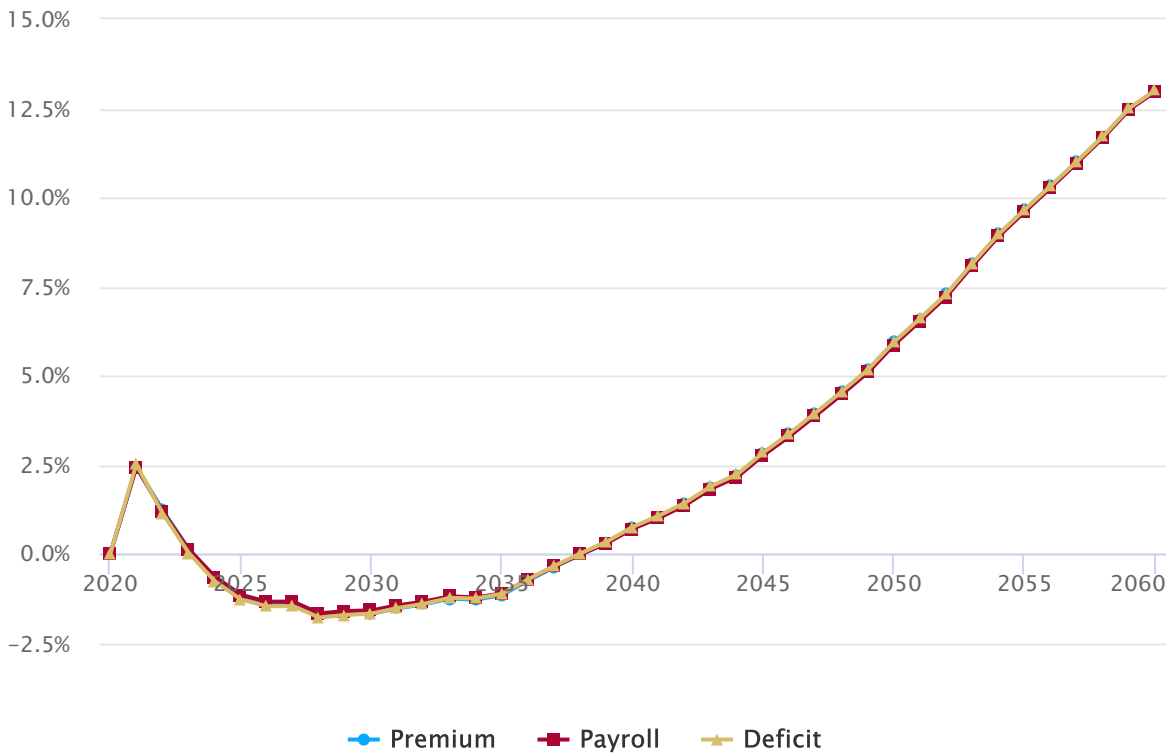
Projections: Financing

Figure 5 shows the change in premiums paid by workers under three financing mechanisms: premium financing, payroll tax financing and deficit financing. Insurance premiums fall the most under payroll tax and deficit financing, since M4A is financed without additional premiums; however, the premiums are not completely eliminated because workers still pay the same premiums as retirees, which are lower than the actuarial value of the benefits.
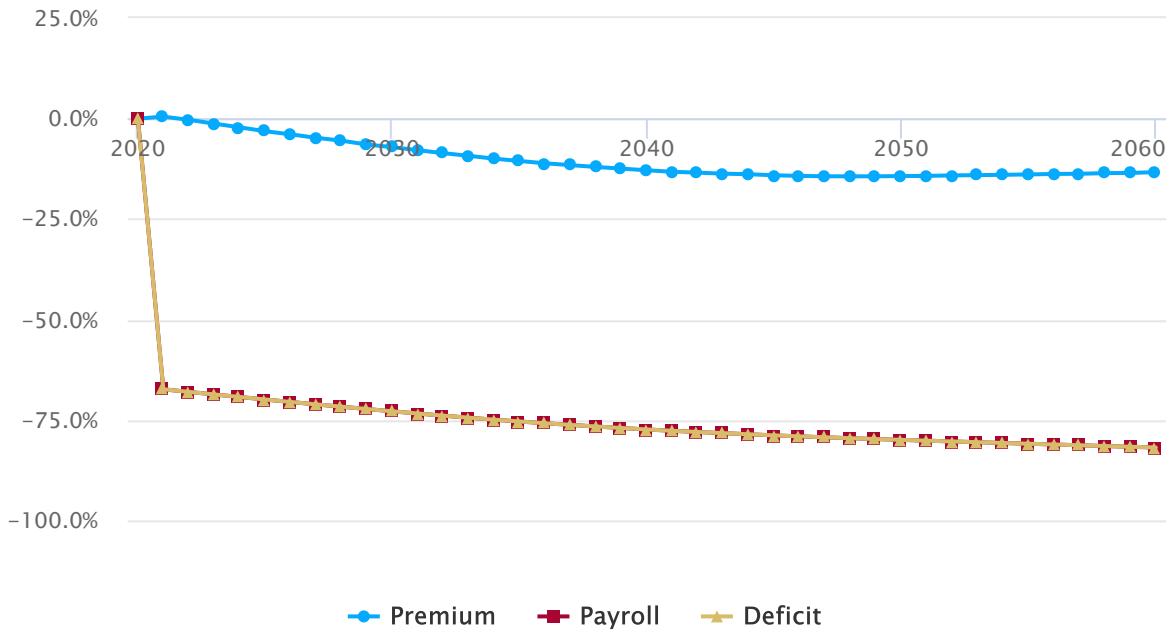
Figure 5. Payroll Taxes and Premiums

DOWNLOAD DATA
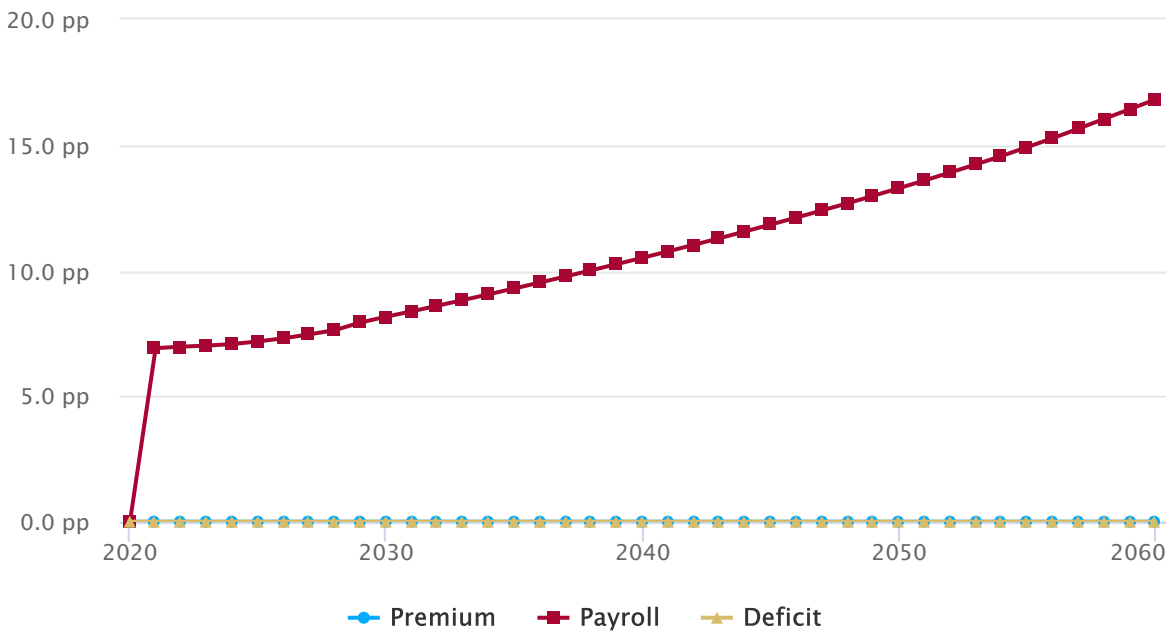
◉ Insurance Premiums
○ Increase in Payroll Tax Rates

Insurance Premiums

Percent Difference from Current Law

●—● Premium   ■—■ Payroll   ▲—▲ Deficit

Increase in Payroll Tax Rates

Percentage Point Change from Current Law

●—● Premium   ■—■ Payroll   ▲—▲ Deficit

Projections: The Federal Budget

Figure 6 presents the impact of M4A on key government budget variables, including income tax revenue, payroll tax revenue, Social Security (OASI) spending, and federal debt. Readers can select different variables from the pull-down menu. By 2060, income tax revenue increases by almost 35 percent for premium financing. For payroll tax financing, revenue increases by almost 8 percent by 2060, despite contracting GDP reported below, as the tax deductibility of private insurance is eliminated. With deficit financing, the negative impact on economic growth (reported below) eventually leads to an overall reduction in tax revenue, despite the statutory base expansion. Payroll tax revenue also increases, especially under payroll tax financing of M4A, as reported wages increase after employer-subsidized health benefits are removed. Social Security (OASI), therefore, receives more tax revenue immediately but also eventually owes more benefits over time. A future PWBM brief will examine the impact of M4A on Social Security in more detail.[14]
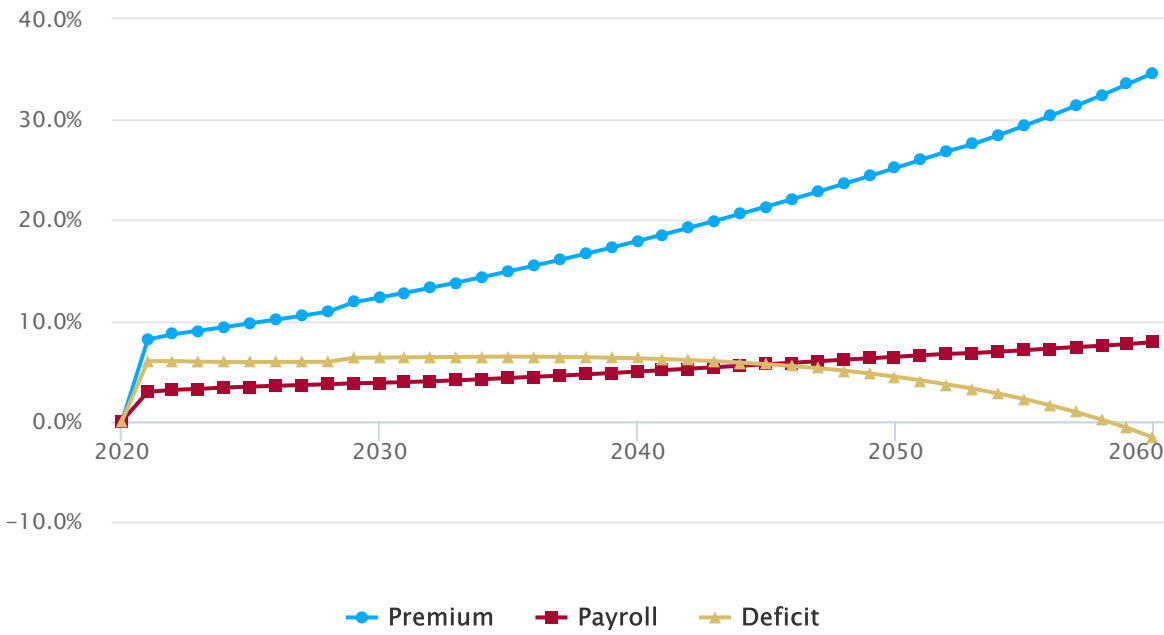
Figure 6. Revenue, Debt and Social Security Payments

- ⦿ Difference in Income Tax Revenues
- ◯ Differences in Payroll Tax Revenues
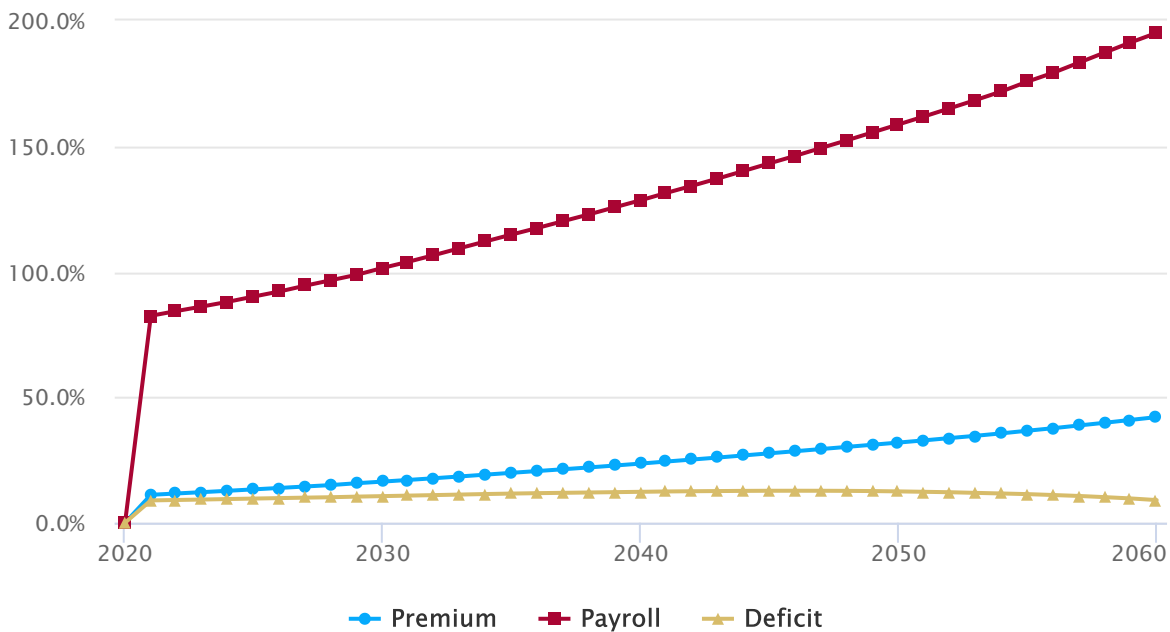- ◯ Difference in Government OASI Spending
- ◯ Difference in Debt

Difference in Income Tax Revenues
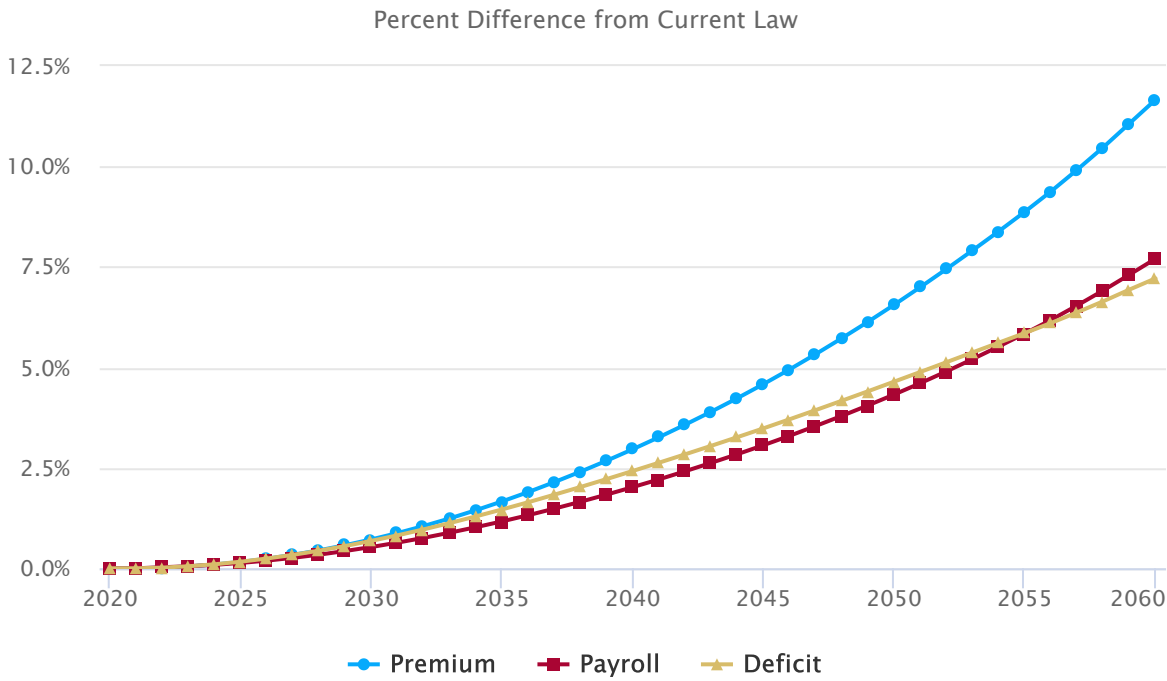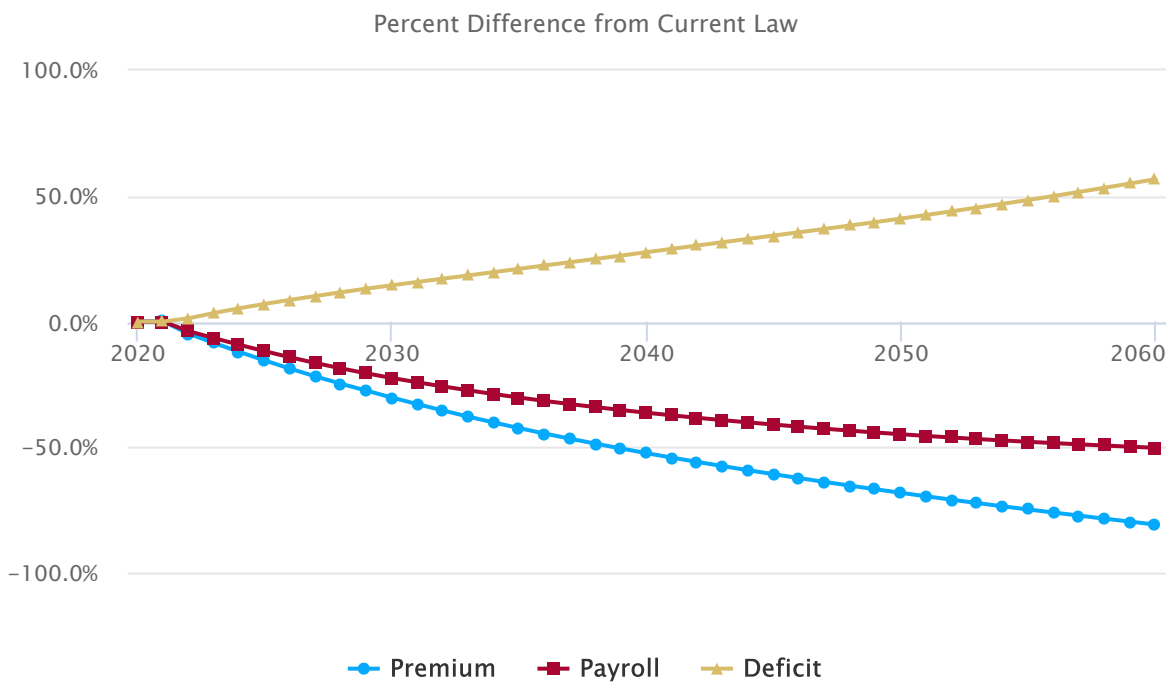
Percent Difference from Current Law

── Premium ──■── Payroll ──▲── Deficit

Differences in Payroll Tax Revenues

Percent Difference from Current Law

── Premium ──■── Payroll ──▲── Deficit

Difference in Government OASI Spending

Percent Difference from Current Law

Legend: ● Premium ■ Payroll ▲ Deficit

Difference in Debt

Percent Difference from Current Law

Legend: ● Premium ■ Payroll ▲ Deficit

Projections: The Economy

As discussed in more detail in our technical presentation, the economy in the model is calibrated to various macroeconomic targets. In the near term, the economy is expected to grow faster than the government's borrowing rate (near zero). But there is still no "free lunch" in government borrowing since additional debt reduces investments in private capital, which has a higher return. Specifically, the real (net of inflation) marginal product of capital after depreciation but before business and household taxes is 5 percent in the near term. Readers familiar with macroeconomic models will notice that the "crowd out" cost per dollar of

additional debt, therefore, is lower in our model than in macroeconomic models commonly found in the literature about a decade or so ago.[15] However, our model captures the significant growth in government debt under current law, which we have documented elsewhere. Adding additional deficits to this rising stock of debt further erodes private investment.

Figure 7 presents key macroeconomic variables, including changes in hours worked in the economy, changes in the size of the capital stock and changes in GDP. Readers can select different variables from the pull-down menu.
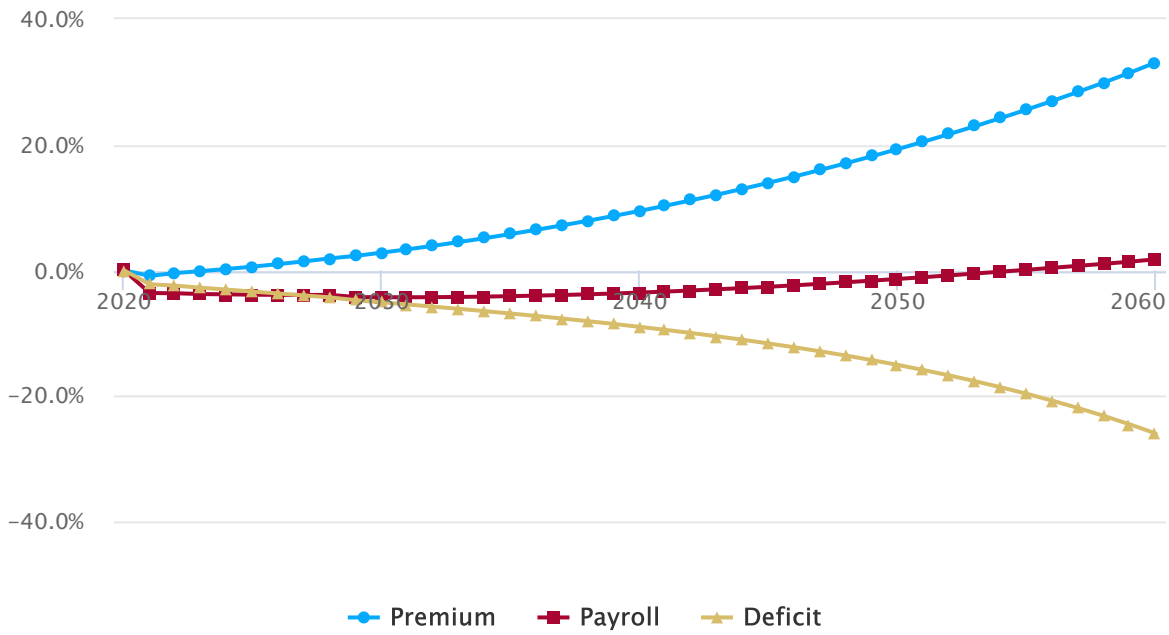
Figure 7. Key Macroeconomic Variables

DOWNLOAD DATA

- ⦿ Difference in Capital
- ○ Difference in Hours Worked
- ○ Difference in GDP
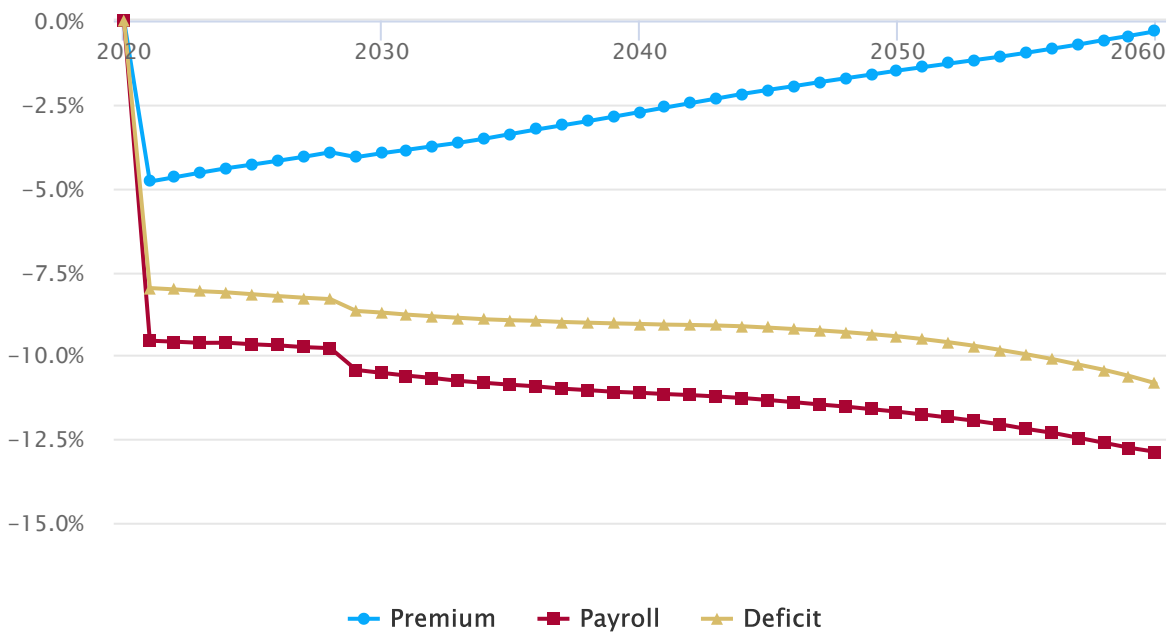- ○ Difference in Output per Hour

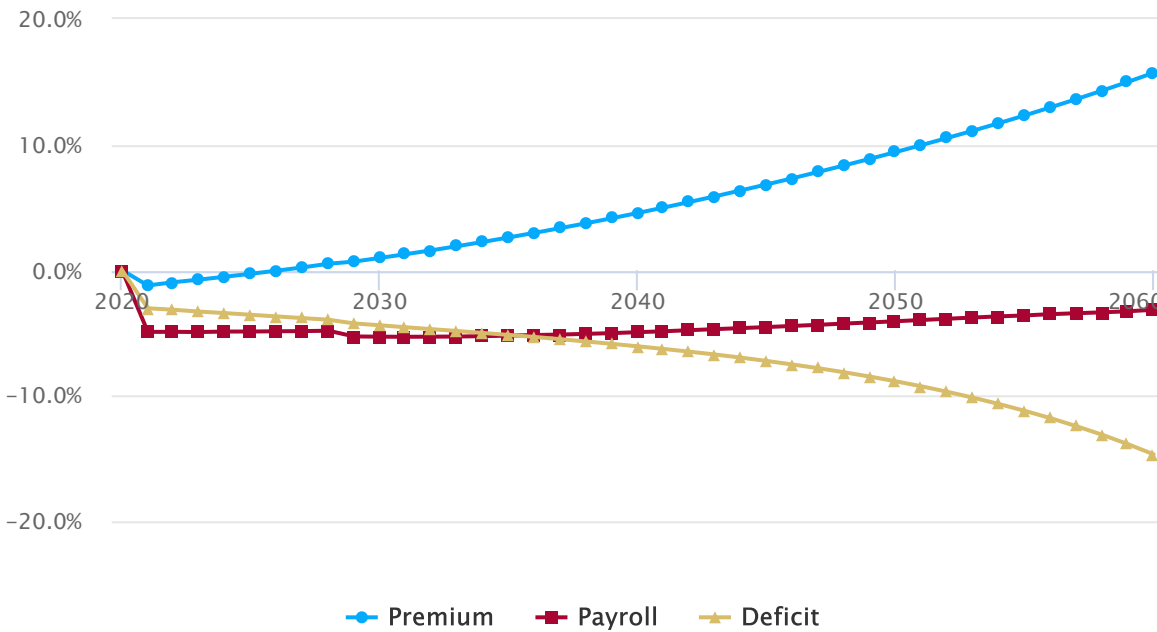## Difference in Capital

Percent Difference from Current Law

Legend: Premium, Payroll, Deficit

Difference in Hours Worked

Percent Difference from Current Law

Legend: Premium, Payroll, Deficit

Difference in GDP

Percent Difference from Current Law

Legend: Premium, Payroll, Deficit

Difference in Output per Hour

Percent Difference from Current Law

Legend: Premium, Payroll, Deficit
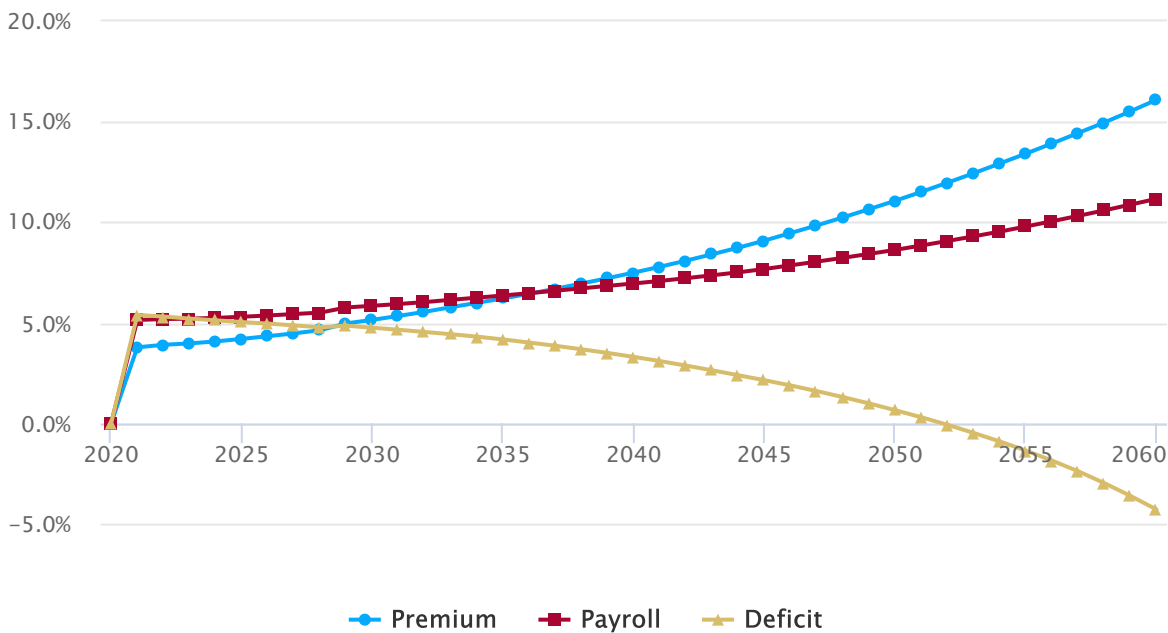
Hours Worked: Each financing mechanism lowers hours worked in the short run. With premium financing, workers enjoy an increase in lifetime resources through lower overhead costs and excess cost growth in M4A, producing an "income effect" that allows them to consume more leisure, either by reducing hours worked (the "intensive" margin) and participation (the "extensive" margin). Deficit financing produces an even larger income effect, as a large amount of the financing gets pushed forward to future generations. Payroll taxes introduce additional "substitution effects" that are common to distortionary taxes, lowering labor supply even more. Over time, premium financing expands labor supply, as capital and wages increase. However, hours worked continue to fall for deficit and payroll tax financing.

Capital supply: Premium financing increases capital accumulation by 33.1 percent by 2060, whereas payroll tax financing reduces it in the short run while recovering to roughly current law values by 2060. Deficit financing reduces capital formation, by over 27 percent by 2060, as a larger share of household savings and international capital flows are redirected away from productive investment toward financing immediate health care consumption today. Putting these numbers together, the capital stock in 2060 is 77 percent larger with premium financing relative to deficit financing.

Wages and Output per Hour: Changes in worker wages occur from four different sources, the first one being purely mechanical in nature, and the rest being "real" in nature:

- Competitive labor markets: wages increase through competitive micro-economic labor markets, as employer-based health benefits are eliminated, forcing up wages. However, this effect is "mechanical" in nature and does not correspond to any improvement in the actual well-being ("welfare") of workers.

- "Fiscal externalities:" The first mechanical effect, though, produces indirect real effects though other tax channels, as more of a worker's reported compensation is now subject to income and payroll taxation. Holding all other factors fixed, this additional revenue reduces deficits, increasing national saving and the capital stock, in turn boosting wages.

- Improved health: As noted earlier, improvements in health effectively increase the productivity of workers, raising their wages.

- Macroeconomics: Wages will rise if the capital stock grows faster than labor supply, as labor becomes a more scarce factor of production.

The three real effects are captured by the changes in "Output per Hour," as shown in Figure 7.

Under premium financing, output per hour eventually increases by as much as 16 percent, reflecting all three effects noted above. Under payroll tax financing, output per hour increases by 11 percent, largely because hours worked falls more sharply than capital, thereby making labor scarcer over time. Under deficit financing, despite a 5 percent increase in output per hour in the short run, output per hour eventually decreases by over 4 percent.

Gross Domestic Product: GDP represents the nation's production of goods and services. GDP can increase due to several factors that we capture:

- Improvements in worker productivity due to better health

- Changes the total number of workers due to population growth

- Changes in hours worked per worker due to after-tax changes in hourly wages

- Changes in capital stock due to changes in household saving and international capital flows

By 2060, GDP rises by 16 percent with premium financing, falls by 3 percent with payroll tax financing, and falls by 15 percent with deficit financing. Premium financing, therefore, produces a GDP that is over a third (36 percent) larger than deficit financing by 2060.

Felix Reichling and Kent Smetters produced the analysis and wrote this report, with research assistance from

Related Reading at PWBM:

- Senator Sanders' Medicare for All (S.1129): An Integrated Analysis

Related Reading elsewhere at Penn:

Note: These readings will access websites not controlled by PWBM. PWBM does not advocate for any policy, and so any opinions that may be expressed in linked articles reflect the opinions of those authors.

- Health Inequity in the U.S. (Source: Leonard Davis Institute)
- The Value of Teaching Hospitals (Source: Leonard Davis Institute)
- What does "life expectancy" really mean? (Source: USAFacts)

---

1. See Kaiser Family Foundation (2018), "2018 Employer Health Benefits Survey." The 77.5 average value is the weighted average between individual and family coverage. ↵

2. To properly account for economic feedback effects, we include the state-level cost share of Medicaid financing using a linear tax. ↵

3. Under current law, we set overhead costs to 15 percent for Private health insurance, 9 percent for Medicare, and 7 percent for Medicaid. ↵

4. See Congressional Budget Office (2018), "Appendix B: Changes in Long-Term Budget Projections Since March 2017," updated for 2020. ↵

5. Medicaid might also discourage the purchase of long-term care insurance, as shown by Brown, Jeffrey R., and Amy Finkelstein. "The interaction of public and private insurance: Medicaid and the long-term care insurance market." American Economic Review 98, no. 3 (2008): 1083-1102. ↵

6. Department of Veteran Affairs, "Department of Veterans Affairs - Budget in Brief (2020)", 2019. ↵

7. Defense Health Agency, "Evaluation of the TRICARE Program: Fiscal Year 2019 Report to Congress", 2019. ↵

8. Congressional Budget Office, "Federal Subsidies for Health Insurance Coverage for People Under Age 65: 2019 to 2029", 2019. ↵

9. Centers for Disease Control and Prevention, "Summary Health Statistics: National Health Interview Survey", 2018. ↵

10. If markets were competitive enough to identify healthier workers who drop their coverage and increase their wages, even more drops would occur. ↵

11. Specifically, we calculate a household's resources equal to assets + asset income + labor income + transfer income - tax payments - insurance premium - out-of-pocket (OOP) medical expenses. If resources fall below $5,000, the model checks whether the shortfall is due to medical expenses. The shortfall not due to medical expenses are picked up by SNAP and the shortfall due to medical expenses (OOP or premium) is picked up by Medicaid. ↵

12. The projected outcomes vary by financing mechanism and macroeconomic variables that, for example, impact labor productivity and returns to saving. ↵

13. This population is defined as being in health states 4 or 5 in our posted technical presentation. ↵

14. Social Security benefits determined at the point of retirement are weighted upward by wage-indexed factors that account for the rise of wages over time. M4A would increase reported wages "mechanically" (rather than by growing the size of the economy) through competitive labor markets. As a result, initial benefits received by new retirees could be mechanically adjusted upward, despite new retirees not having paid more into the program. For these calculations, we assume that M4A would require a one-time adjustment to these factors to avoid this mechanical effect. ↵

15. In particular, our calibration is very consistent with the argument in Blanchard, Olivier. "Public debt and low interest rates." American Economic Review 109, no. 4 (2019): 1197-1229. ↵