The COMMONWEALTH FUND

Hillary Clinton's Health Care Reform Proposals: Anticipated Effects on Insurance Coverage, Out-of-Pocket Costs, and the Federal Deficit

TECHNICAL APPENDIX

INTRODUCTION

This appendix supports RAND's analysis of aspects of Secretary Hillary Clinton's health reform plan, including proposals to offer cost-sharing tax credits for those with high health spending, to reduce premium contributions for those eligible for advance premium tax credits (APTCs) on the Affordable Care Act (ACA) marketplaces, to fix the so-called "family glitch" that precludes some families with expensive employer coverage from receiving marketplace tax credits, and to add a public option on the marketplaces. This document provides details on our modeling assumptions, as well as additional background on the policies modeled. We start with a general overview of COMPARE. Details on each of Clinton's proposals that we modeled can be found toward the end of the document.

OVERVIEW OF COMPARE

We used the COMPARE microsimulation model to estimate how the ACA and Clinton's proposed modifications would affect health insurance enrollment, individual out-of-pocket spending, the federal deficit, and several other outcomes. A complete description of the methods underlying COMPARE can be found in Cordova et al. (2013). Briefly, we create a synthetic population of individuals, families, health expenditures, and firms using data from the April 2010 cross-section of the 2008 Survey of Income and Program Participation (SIPP), the 2010 and 2011 Medical Expenditure Panel Survey (MEPS), and the 2010 Kaiser Family Foundation Employer Health Benefits Survey. These data sets are linked using statistical matching on key demographic characteristics, such as self-reported health status and income. We assign each individual in the SIPP a spending amount using the spending of a similar individual from the MEPS. We then augment spending imputations with data on aggregate spending levels from the National Health Expenditure Accounts (NHEA), as well as data on high-cost claims from the Society of Actuaries (SOA). The NHEA adjustment accounts for the fact that the MEPS underestimates total medical spending levels, while the SOA adjustment corrects the underrepresentation of individuals with high spending in the MEPS data.

We calibrate COMPARE to approximate the pre-ACA health insurance market that existed in 2010 as a basis for estimating the impact of health reforms. Calibration is a process by which we

adjust the algorithms in the model so that estimates of pre-ACA health insurance enrollment and premiums match actual health insurance enrollment data collected before the provisions of the law took effect. We calibrate the model to reflect enrollment data by insurance type, age group, income group, and self-reported health status from the SIPP, with additional adjustment to account for pre-ACA individual market enrollment levels reported to the Centers for Medicare and Medicaid Services (CMS) as part of regulatory requirements.

A key feature of the model is that premiums are calculated dynamically. Individuals sort into health insurance plans by choosing their preferred option. Next, premiums are calculated based on the profile of the enrolled pool. If premiums are too high, some enrollees will opt to drop an insurance option, while if premiums are low, additional individuals may enroll. This iterative process continues until the model achieves equilibrium, defined such that premiums and enrollment decisions are stable between model iterations. The model can detect a "death spiral" if enrollment approaches zero while premiums rise to a very large number. A "death spiral" is an extreme manifestation of adverse selection, in which younger and healthier enrollees may respond to high premiums by dropping out of the risk pool, leaving older and sicker enrollees who have higher medical spending in the pool.

MODELING THE AFFORDABLE CARE ACT

To model individual and family health insurance enrollment decisions under the ACA, COMPARE uses a utility maximization approach, in which decision-makers weigh the costs and benefits of available options. The utility-maximization framework accounts for the tax penalty for not purchasing insurance, the value of health care consumption, premium costs, expected out-of-pocket health care spending, and financial risk associated with out-of-pocket spending. We scale each of these components of utility to dollars and assume that they are additively separable, following Goldman, Buchanan, and Keeler (2000). We further assume that individuals' utilities are separable in consumption and health. The health-related component of the utility function is modeled as follows:

$$(1)\ U_{ijk} = u(H_{ij}) - E(OOP_{ij}) - p_{ij}^{H} - \tfrac{1}{2}\, rVAR(OOP_{ij}) - Penalty_j + Calibration_{jk}$$

where $u(H_{ij})$ is the utility associated with consuming health care services for individual i under insurance option j, and k represents an individual's demographic group based on age, health status, and income. OOP_{ij} is the out-of-pocket spending expected, $p(^{H})$ is the premium and r is the coefficient of risk aversion. Possible health insurance enrollment choices (j) under the ACA may include employer coverage, Medicaid or the Children's Health Insurance Program (CHIP), an ACA-compliant individual market plan (including plans available on and off the marketplaces), or another source of coverage.[1] Individuals can also choose to forgo insurance. Not all individuals will have access to all forms of coverage. For example, access to Medicaid is contingent on eligibility, and individuals will only have access to employer coverage if they (or their spouse or parent) work for a business that offers insurance. The penalty term represents the penalty associated with insurance status j, and is 0 for all but the uninsured insurance status. The term "$calibration_{jk}$" adjusts utilities to match enrollment patterns observed in pre-ACA data; the term accounts for nonpecuniary factors that may influence preferences for different types of insurance, such as the convenience associated with enrolling in employer coverage or access-constraints associated with Medicaid. Specific modeling strategies for each source of coverage j are described below.

Small-Group Employer Coverage

Small employers in the model choose whether to offer coverage based on worker preferences and a small set of other factors including industry and whether workers are unionized. Under the ACA, all small firms are part of a single risk pool with guaranteed issue, 3-to-1 rate banding on age, and restrictions that preclude insurers from charging different premiums to different groups other than based on geography, family size, tobacco use status, and the generosity of the plan. In the current version of the model, small-group market regulations apply to all firms with 50 or fewer employees regardless of year. Earlier versions of the model expanded the small-group market to include firms with 100 or fewer workers after 2015, as originally intended by the ACA. We revised the definition because the Protecting Affordable Coverage for Employees Act, signed into law in late 2015, amended the ACA's definition of small employer to include firms with one to 50 employees in perpetuity, unless states opt to extend the small-group market to firms with up to 100 workers. Small firms in the model are permitted to purchase a 60 percent, 70 percent, 80 percent, or 90 percent actuarial value plan on the ACA's regulated small-group market, which includes the Small Business Health Options Program (SHOP) marketplaces. Small firms in the model may retain grandfathered status, which exempts them from the ACA's rating regulations, although we assume that a certain percentage of small firms will lose grandfathered status each year.

The ACA also offers a small business tax credit to small firms with low-wage workers who obtain coverage through the SHOP marketplaces. Because firms can take advantage of these credits for only two years, we assume all small firms will have exhausted their tax credit eligibility by 2018 (the year modeled in this analysis).

Large-Group Employer Coverage

Like small employers, large employers choose whether to offer coverage based on worker preferences and several other characteristics including union status and industry. We allow large firms that offer coverage to choose between four plans, which are distinguished by plan generosity and rated based on enrollees' expected health expenditures. We estimate premiums for the large-group market based on a regression that accounts for factors such as employer characteristics, industry, and census region. The firm's decision to offer is modeled using structural econometric techniques; more details are provided in the appendix of Eibner et al. (2011).

Medicaid

We model state Medicaid expansion decisions as of June 22, 2015 (Kaiser Family Foundation 2015).[2] We assume that, under the ACA, states with Medicaid eligibility thresholds that exceeded 138 percent of the federal poverty level before 2014 will roll back their eligibility thresholds to 138 percent poverty because of federally funded tax credits and cost-sharing subsidies that become available to this group. In states that did not expand Medicaid, individuals who would have qualified for Medicaid expansion and have income above the federal poverty level can obtain tax credits on the marketplaces. However, those with incomes below the federal poverty level are ineligible for tax credits. Through our calibration process, the model accounts for the fact that not all Medicaid-eligible individuals chose to enroll, perhaps because of stigma, lack of information, or transaction costs associated with enrolling.

Individual Market

Under the ACA, the individual market consists of two components: 1) the insurance marketplaces where individual can receive tax credits, and 2) off-marketplace plans that comply with the ACA's rating requirements. Because the ACA requires all plans in the individual market to be rated together, we model on- and off-marketplace plans that are ACA-compliant as a single risk pool. Hence, we do not distinguish between enrollment in on-marketplace plans and off-marketplace plans that comply with the ACA. In the ACA-compliant individual market, modeled individuals and families can purchase plans with a 60 percent, 70 percent, 80 percent, or 90 percent actuarial value corresponding to bronze, silver, gold, and platinum plans on the marketplaces. We do not model catastrophic plans, which are available only to those who are under 30 or who qualify for a hardship exemption from the individual mandate. According to a 2015 fact sheet published by the CMS, less than 1 percent of all marketplace enrollees have selected catastrophic coverage (CMS 2015).

ACA-compliant individual market premiums are calculated endogenously in the model based on the health expenditure profile of those who choose to enroll. The total, unsubsidized premium is based on enrollees' age, smoking status, and the market rating reforms implemented under the ACA. We model 3-to-1 rate banding on age for adults age 21 and older, with a separate age band for children and young adults under the age of 21. We also account for the ACA's risk adjustment requirements, which transfer funds from plans with lower than average actuarial risk to plans with higher than average actuarial risk. We found that COMPARE, which uses average enrollee spending to compute premiums, slightly overestimated premiums relative to prices actually reported in the marketplaces for 2015. These differences may be the result of factors that influence premiums but cannot be modeled, such as cross-subsidization among an insurer's plans, competitive market forces between insurers, and imprecise insurer forecasting. To account for this issue, we applied a ratio adjustment to modeled premiums based on the ratio of actual-to-modeled premiums in 2015.

Under the ACA, the actual premium that an enrollee pays is adjusted to account for tax credits available to qualifying individuals with incomes between 100 percent and 400 percent of poverty who do not have affordable offers of insurance from another source (e.g., employer coverage, Medicaid). We apply the ACA's subsidy formula using the benchmark silver premium and the individual's income. Eligible individuals who have income between 100 percent and 250 percent of poverty also can receive cost-sharing reduction subsidies (CSRs) that help lower out-of-pocket spending. As required in the ACA, individuals receiving CSRs in COMPARE must purchase a silver plan (70 percent actuarial value), and out-of-pocket spending is reduced to what it would be under a 94 percent, 87 percent, or 73 percent actuarial value plan if the individual's income is between 100 percent and 150 percent, 150 percent and 200 percent, or 200 percent and 250 percent of poverty, respectively. Note that out-of-pocket spending enters the individual's utility function, and hence individuals receiving CSRs are more likely to purchase coverage.

The model accounts for the medical and dental expenses deduction allowed by the Internal Revenue Service (IRS) for those with health spending in excess of 10 percent of adjusted gross income. Because this credit is available only to those who itemize deductions, we assume not everyone will claim it. We impute claiming behavior by income group and eligibility, based on statistics reported by the Congressional Research Service (Lowry 2014).

ADJUSTMENTS TO REFLECT POST-ACA EXPERIENCE

Because the major insurance coverage reforms of the ACA took effect in 2014, it is now possible to compare model estimates to actual empirical data on health insurance enrollment. In doing so with the penultimate version of the model, we found that, like other models (Glied, Arora, and Solís-Román 2015), COMPARE overestimated enrollment on the health insurance marketplaces and underestimated enrollment in Medicaid. The Medicaid underestimate appears to stem from the fact that earlier versions of the model had not accounted for the so-called "welcome mat effect," which describes the possibility that previously eligible individuals might newly enroll in Medicaid because of increased publicity, awareness of the law, enrollment outreach, and other factors. In the current version of the model, we address this issue by adding an "awareness" factor to the Medicaid utility calibration ($calibration_{jk}$) in model runs for years 2014 and later. In 2018, the awareness factor increases the utility of Medicaid for previously eligible individuals by $200. This awareness factor allows us to reproduce post-ACA Medicaid enrollment totals reported in the Current Population Survey.[3]

To address the overestimate of nongroup enrollment, including enrollment in subsidized plans on the ACA's marketplaces, we reduced the effective value of the individual mandate penalty by a factor of 0.8. We chose this value based on the observation that tax compliance in the United States hovers around 80 percent, according to the IRS (US IRS 2016). Our adjustment, therefore, accounts for the likelihood that some individuals will fail to pay their individual mandate penalties, which are collected by the IRS as part of the income tax collection process.

Table A.1 compares the current RAND insurance estimates for 2018 to those of the Congressional Budget Office (CBO), which also recently updated its model to account for observed enrollment (CBO 2016). The two models are very close, except RAND includes about 8 million fewer Medicaid enrollees than the CBO. We believe this difference stems from the fact that the CBO allows people in their model to have more than one source of coverage, while RAND assigns each individual a primary insurance category. Our uninsurance rates are similar.

Appendix Table A.1. COMPARE and Congressional Budget Office Insurance Estimates for 2018 (in Millions)

	COMPARE	CBO
Employer coverage	156.3	153
Medicaid and CHIP*	60.3	68
Individual market, including the marketplaces	22.6	26
Subsidy-eligible on the marketplaces	13.1	15
Other	12.3	14
Uninsured	24.9	26
Total population under age 65	276.5	274
Uninsurance rate	9.0%	9.5%

* For the CBO column, this row includes the basic health plan, which RAND does not model. The CBO allows for double-counting across insurance categories, while RAND assigns each individual to a primary insurance category.
Data: RAND COMPARE microsimulation model and CBO (2016).

In addition to the updates to align the COMPARE model with post-2014 enrollment data, we also updated the most recent version of the model to incorporate the latest population growth trends published by the U.S. Census Bureau.

MODELING THE REFORMS

To understand the details of Clinton's proposed reforms, we reviewed her website.[4] We then asked several questions to the campaign to ensure that we understood the proposed reforms correctly, and the campaign provided responses. Below, we describe our approach to modeling each of the proposals addressed in our issue brief.

Cost-Sharing Tax Credits

We model a cost-sharing tax credit of up to $2,500 per individual and $5,000 per family for health spending in excess of 5 percent of income. The credit is available to everyone with private coverage regardless of income or plan actuarial value and is applied against the combination of employee premium contributions and out-of-pocket cost sharing for medical expenses (excluding spending on dental and vision care). To model the tax credit, we reduced expected total spending on premiums and out-of-pocket cost-sharing in the first equation to account for the tax credit, taking into account that—for families—the credit is applied against total family spending. We applied the tax credit after adjusting for cost-sharing reductions and the ACA's out-of-pocket spending maximums.

In modeling the impact of the tax credit on individuals' utilities, we calculated expected spending within groups based on family size, source of coverage, income, the age of the oldest family member, and the health status of the least healthy adult in the family. We applied the tax credit before rather than after taking the average; this is an important nuance because—due to the nonlinear nature of the credit—the order of operations can affect results. Further, we accounted for the fact that people know their premium with certainty but have uncertain information about future out-of-pocket spending. Mathematically, we calculated expected spending conditional on tax credit availability as follows:

$$E(Spend_{ij}) = 1/K \sum_{(k=1)}^{K} Min\{(Premium_i + OOP_{jk}), Max(0.05Y_i, Premium_i + OOP_{jk} - Tax\ Credit\ Cap)\}$$

In the equation above, i represents the individual or family and j represents a demographic group based on family size, source of coverage, income, the age of the oldest family member, and the health status of the sickest adult in the family, and k indexes a set of possible precredit out-of-pocket outcomes within group j. Premiums and income (Y) are known with certainty to individual i, while out-of-pocket spending ($OOPj$) is estimated based on expected spending within group j. The tax credit cap equals $5,000 for families and $2,500 for individuals. For computational tractability, we calculated the expectation over 20 draws (K=20) from group j.

As modeled, the tax credit can affect individuals' plan choices by reducing the total financial impact of enrolling in a particular plan. The credit can induce uninsured people to enroll, and it also can cause people to change enrollment decisions. For example, it may cause individuals on the marketplaces to switch from lower to higher actuarial value plans, if moving to the higher actuarial value plan causes them to exceed the threshold required to claim the credit. COMPARE adjusts for the fact that individuals who enroll in higher actuarial value plans tend to consume more health care than they would if they enrolled in a less generous plan. However, conditional on plan choice, we assume the tax credit does not affect utilization decisions. In reality, the tax credit may have complicated effects on utilization, because of the stepwise nature of the benefit. People with spending just below the credit limit may increase utilization to hit the threshold, while people may reduce utilization as

they approach the maximum credit amount. However, the credit may have little to no effect on utilization among those whose spending is unlikely to exceed 5 percent of income or for those who expect to claim the maximum credit.

The effect of the credit on utilization is further complicated by liquidity constraints. Some individuals may be unable to shoulder the short-run costs of additional health spending, even if they will be reimbursed after they file their tax returns. Our approach to modeling the tax credit's effect on utilization is consistent with liquidity constraints. However, we allow people to enroll in health plans or change plan choices in response to the credit without accounting for these constraints. In reality, implementation choices may influence the degree to which liquidity constraints matter. For example, it's possible that the tax credits could be provided in advance, based on enrollees' expected income and spending, similar to the current approach for APTCs. Alternatively, a private market solution might emerge, offering short-term loans for individuals who are likely to qualify for the credit.

Individuals in the model respond to the *expected* value of the credit when making the decision to enroll in health insurance and when choosing a plan conditional on enrollment. However, when calculating the final effect on federal costs and consumer out-of-pocket spending, we applied the credit against *realized* spending. This approach accounts for the fact that individuals have incomplete information about their future health spending when they enroll. We further assumed that people will claim the full amount of the credit owed to them. In reality, claiming behavior may be influenced by implementation details surrounding how health spending is tracked. If individuals are responsible for saving receipts to claim the credit, it is likely that not everyone will claim the full amount. However, it would be possible to make claiming relatively simple, for example by requiring insurance companies to report consumers' out-of-pocket spending on covered services directly to the IRS.

Based on the feedback from the Clinton campaign, we assumed the cost-sharing credit is available to anyone with private coverage, including employer-sponsored coverage. We further assumed that the credit would be applied against the sum of the workers' premium contributions plus out-of-pocket cost-sharing at the point of service. Potentially, this approach gives firms an incentive to increase workers' premium contributions, so that more workers are eligible to claim the credit. We did not model this potential effect, in part because it depends on factors that are not fully observable to the firm, such as workers' total family income and expected out-of-pocket health expenditure.

The cost-sharing credit also may affect people's willingness to enroll in plans on the health insurance marketplaces. The ACA's APTCs and cost-sharing reductions are available only to people enrolled in marketplace plans, which creates a strong incentive for eligible individuals to choose such a plan. However, the proposed cost-sharing tax credit is available for those in employer-coverage and off-marketplace plans. In states with troubled marketplaces (e.g., few participating insurers, highly restrictive provider networks), it is possible that the availability of cost-sharing tax credits could cause people to exit the marketplace and find alternative sources of coverage. COMPARE does not fully capture this effect, because we are not able to incorporate consumers' perceptions about the desirability of marketplace coverage relative to nonmarketplace plans.

Reduction in Premium Contribution Rates

Under current law, those with incomes between 100 percent and 400 percent of poverty and no other affordable source of coverage are eligible for APTCs, which cap their contribution toward a bencmark health insurance plan on the ACA's marketplaces. In 2016, the required percentage contribution ranges from 2.01 percent of income for those with incomes between 100 percent and 138 percent

of poverty to 9.66 percent of income for those with incomes between 300 percent and 400 percent of poverty. The maximum contribution amounts grow over time by the rate health care cost growth exceeds inflation. Clinton's plan proposes that families purchasing coverage on the marketplaces contribute no more than 8.5 percent of income for a benchmark plan. To model Clinton's policy, we adjusted the maximum percentage contributions by a factor of (8.5/9.66)=0.88. After these adjustments, the percentage contribution amounts ranged from 1.79 percent of income for those with incomes between 100 percent and 138 percent of poverty and no other affordable source of coverage to 8.5 percent of income for those with incomes between 300 percent and 400 percent of poverty.

Fixing the Family Glitch

Under the ACA, people with access to employer-sponsored insurance are ineligible for APTCs unless their employer offer is deemed unaffordable. In 2016, employer plans were designated as unaffordable if the employee contribution for single coverage exceeded 9.66 percent of income. Family employer plans typically require much higher employee contributions than single employee plans, but the ACA's affordability calculation is based on the employee premium contribution for single coverage. Clinton's plan would address this "family glitch" by allowing families to obtain APTCs if they would need to pay more than 8.5 percent of income for a family employer plan, and if they meet other APTC eligibility requirements.

To model the proposed changes, we allowed families to access APTCs if their required contribution for employer-sponsored family coverage exceeded 8.5 percent of income. If the premium contribution for single coverage was less than 8.5 percent of income, we assumed that only dependents became eligible for APTCs. While Clinton's plan is not specific on whether the worker would be eligible, similar legislation sponsored by Senator Al Franken (D-Minn.) supported tax credits for dependents only.[5] We assumed that the policy would be implemented in combination with the reduction in premium contribution rates described above. By combining the policies, we were able to harmonize the 8.5 percent affordability threshold with the proposed 8.5 percent maximum premium contribution for a benchmark plan on the marketplaces. In prior work (Nowak, Saltzman, and Amado 2015) we analyzed the effect of addressing the family glitch without changing premium contribution requirements.

As with the cost-sharing tax credit, it is possible that firms might increase their employee premium contribution requirements to allow families to take advantage of APTCs if the family glitch were to be "fixed." We do not allow this to happen in our model. In the ACA, and as modeled for Clinton's plan, firms face penalties if their workers (but not workers' dependents) enroll in subsidized coverage on the marketplaces. If policymakers were concerned that firms might increase family contributions in response to the proposed policy change, one solution might be to levy the penalty on the firm if a workers' family member received APTCs.

Modeling the Public Option

Clinton would add a public health insurance plan to the ACA's marketplaces. We model the entry of a public plan with a 70 percent actuarial value, similar to the ACA's silver plan. As modeled, the public option differs from private marketplace plans along three dimensions:

1. **Provider payment rates:** We assume that the public plan would reimburse providers at Medicare rates. On average, the literature shows that physicians in Medicare are paid at approximately 80 percent of the commercial rate, and hospitals are paid 60 percent of the

commercial rate. We assume that public and private reimbursement levels are equivalent for other services, including prescription drugs. We further assume that providers may continue to participate in Medicare even if they opt not to participate in the public plan.

2. **Administrative savings:** In COMPARE, we assume that private, nongroup plans spend 20 percent of premiums on administration. Medicare spends much less on administration, reflecting numerous possible savings such as economies of scale, limited churn in and out of the program, less need for marketing, and reduced motive to earn a profit. According to the CMS National Health Expenditure Accounts, Medicare administrative costs were about 6.5 percent in 2014. We assume that the public option would be able to capture some, but not all, of the administrative savings achieved in the Medicare program. Specifically, we model the administrative load for the public plan as 13.25 percent, the midpoint between the Medicare and the private, nongroup administrative loading factors.

3. **Lower utility:** Because providers will receive lower reimbursement for patients enrolled in the public option, we assume that public enrollees may face access constraints or other barriers that will reduce the utility of the public plan relative to private coverage. To model this effect, we reduce the calibration parameter ($calibration_{jk}$) for the public plan by a factor of 0.86 relative to nongroup coverage.[6] We derive the 86 percent estimate based on the average payment differential for services reimbursed by the public option versus services reimbursed under a private plan. This estimate reflects a weighted average of physician services (reimbursed at 80 percent of the private rate), hospital services (reimbursed at 60 percent of the private rate), and all other services (reimbursed at 100 percent of the private rate).

We further assume that the addition of the public option will place downward pressure on private, nongroup premiums becaus of competition. Dafny, Gruber, and Ody (2015) estimated that if UnitedHealthcare had entered the marketplaces in 2014, the second-lowest-price silver premium would have been 5.4 percent lower on average. We therefore assume a 5.4 percent reduction in nongroup premiums (including marketplace premiums) because of the addition of the public option. A limitation of this approach is that UnitedHealthcare is a for-profit insurer, and it is not clear that the entry of a public plan would lead to the same effect on premiums.

We assume that there is risk adjustment between the public and private plans, and that public option enrollees are eligible for APTCs and CSRs. The risk-adjustment approach incorporated into the model assumes that risk-adjustment payments to private plans reflect private sector rates (rather than rates negotiated by the public plan). Because of the Medicare negotiated rates, the public option is the lowest-cost plan available to individuals in our model. Recently, there has been increased attention on competition in the marketplaces, and preliminary reports suggest that as many as 19 percent of marketplace enrollees, mostly in rural counties, may have only one choice of insurer in 2017 (Cox and Semanskee 2016). Based on these reports, we assume that the public option will be the only plan available to people living in rural areas, and that APTCs in rural areas will be based on the cost of the public plan. We assume that individuals living in nonrural counties will have access to both a public and a private option, and that APTCs in nonrural areas will be tied to the private plan. We do not make additional adjustments to account for steep rates of premium growth that have been reported for the 2017 marketplaces (Cox et al. 2016). It is unclear at this point whether these steep growth rates reflect a long-term trend or a temporary correction, and the addition of a public plan could mitigate these rate increases as a result of increased competition.

MODEL LIMITATIONS

Like all models, COMPARE has limitations. We assume that people behave rationally and choose health insurance based on a utility maximization procedure in which they weigh the costs and benefits of various options. In reality, people may make choices that diverge from the utility maximization approach for many reasons; for example, they may be swayed by marketing, or they may be unable to ascertain the optimal choice because of information overload. In addition, there are some features of health plans, such as provider networks and customer service, that may influence choice but are not included in our model. To the extent possible, we capture these nonpecuniary aspects of plan value through our calibration process, which accounts for the fact that—conditional on plan generosity—people prefer certain types of coverage over others (e.g., people tend to prefer employer coverage to Medicaid). But this calibration is imperfect and cannot address the fact that health reforms themselves may influence preferences.

Another limitation is that we must match workers in the model to health expenditures from one data set (the MEPS) and employer data from another data set (the Kaiser Family Foundation/Health Research & Education Trust 2010 Employer Health Benefits Survey). The use of statistical matching may cause us to understate variation across firms in their worker composition and preferences for insurance. One concern about this omission is that if we fail to capture firms with unusually young and healthy workers who place a low value on access to employer-sponsored insurance, we may underestimate firms' chances of dropping health insurance coverage in response to subsidized options on the nongroup market. While this is a valid concern in theory, consistent with COMPARE's predictions, there is no evidence that firms are systematically dropping coverage in response to the ACA (Claxton et al. 2015).

More generally, we need to make a number of simplifying assumptions to model firm behavior. For example, firms in COMPARE can offer at most one plan, and the model does not allow firms to adjust their contribution for employer coverage in response to public policies. In addition, we do not model an array of plans on the ACA's marketplaces with different networks, utilization management tools, and cost-sharing arrangements. Rather, we model a single, representative plan in each metal tier (bronze, silver, gold, and platinum). The inability to model an array of plans makes it difficult for us to capture the effects that the public option might have on competition. We make the assumption that the public option will reduce private premiums in metropolitan areas through competitive pressures, and cause private plans to exit in rural areas because of an inability to compete with Medicare negotiated rates. However, these are strong assumptions, and the impact of the public plan may be different depending on local market characteristics that are not captured in the model.

Finally, we do not address broader labor market outcomes that may be influenced by health insurance reform, such as early retirement or other reductions in labor force participation. Some of these outcomes may interact with other proposals offered by Clinton, such as policies to make college more affordable for low- and middle-income families, changes in the tax code, and paid family medical leave.

COMBINED SCENARIO

Our brief focuses on four policies as implemented individually, not the entirety of Clinton's health plan. Clinton's plan includes many features that we did not attempt to model, including allowing individuals ages 55 and over to buy into the Medicare program, expanding access to health insurance

coverage for immigrant families, and negotiating reductions in prescription drug costs. Her plan also includes health-related policies that are not directly tied to insurance, such as investments in Alzheimer's research and improvements in the nation's public health infrastructure. We modeled critical components of the plan that were known as of March 2016 and added the public option when it was announced in July 2016. While we do not model the full plan, below we discuss the combined effect of the four policies that we analyzed.

In Table A.2 we report the coverage effects of the four policies analyzed in the issue brief along with a combined scenario that estimates the effect of all four reforms implemented simultaneously. It is informative to consider the effect of the combined scenario relative to the cost-sharing tax credit as implemented individually, because the cost-sharing tax credit had the largest effect of any of the policies modeled. Interestingly, combining the options has virtually no impact over and above the cost-sharing tax credits—roughly 261 million people are insured in both scenarios. The cost-sharing tax credits dramatically increase coverage because enrollees face substantial additional protections against higher costs. In combination with these policies, the additional cost protections offered by the other reforms become redundant. For example, reducing the premium contribution to a maximum of 8.5 percent of income for those at 300 percent to 400 percent of poverty does relatively little when the cost-sharing tax credit already subsidizes spending above 5 percent of income. Similarly, adding a public option on the marketplaces, even if cheaper than private coverage, does little to encourage enrollment when tax credits cap spending at 5 percent of income (for expenses up to $2,500 for an individual, $5,000 for a family), and premium spending is capped at even lower levels for some APTC-eligible marketplace enrollees.[7]

Appendix Table A.2. Insurance Enrollment Estimates Under Clinton's Proposed Reforms by Source of Coverage (in Millions), 2018

	ACA	Add cost-sharing credit	Reduce maximum contribution	Reduce maximum contribution and fix family glitch	Add public option	*All four* policies combined
Employer	156.3	159.9	156.1	154.6	155.6	156.5
Large employer	120.1	122.5	120.2	118.8	119.9	120.6
Small group	36.2	37.4	36.0	35.8	35.6	35.9
Nongroup/Marketplaces	22.6	33.2	24.4	26.6	24.3	36.5
Public	NA	NA	NA	NA	14.0	10.9
Private	22.6	33.2	24.4	26.6	10.3	25.6
Medicaid	60.3	55.8	60.4	60.8	59.8	55.4
Other	12.3	12.3	12.3	12.3	12.3	12.3
Total insured	251.6	261.2	253.2	254.3	252.0	260.7
Uninsured	24.9	15.3	23.2	22.1	24.5	15.8

Source: Estimates from RAND COMPARE microsimulation model.

Table A.3 shows total out-of-pocket health spending among those with insurance, by income, for the four policies estimated in the issue brief and the combined scenario. Relative to the cost-sharing credit scenario, the combined scenario has a small impact on total out-of-pocket spending for those with incomes below 139 percent of poverty or above 400 percent of poverty but reduces average spending by $157 to $163 per person for those with incomes between 139 percent and 400 percent of poverty. In general, this is because the addition of a public plan on the marketplaces can make coverage free or extremely inexpensive for some APTC-eligible individuals. The APTC amount is calculated as the difference between the cost of the second-lowest-cost silver plan available on the marketplaces and the individual's required contribution, which is a percentage of income. For nonrural dwellers in our model, the second-lowest-cost silver plan available on the market is the private plan. Coverage can be free if $Premium_{public} <= (Premium_{private} - R*Y)$, where R is the required percentage contribution and Y is income. We estimate that 12 percent of individuals who move from private to public marketplace coverage receive free coverage when the public option is introduced.

Appendix Table A.3. Total Out-of-Pocket Health Care Spending (Premium Contributions + Out-of-Pocket Cost-Sharing) Under Clinton's Proposed Reforms, All Insured by Income, 2018

	ACA	Add cost-sharing credit	Reduce maximum contribution	Reduce maximum contribution and fix family glitch	Add public option	*All four* policies combined
<139% FPL	$556	$426	$548	$542	$546	$421
139%–250% FPL	$1,657	$1,111	$1,548	$1,478	$1,503	$954
251%–400% FPL	$3,089	$2,558	$2,993	$2,933	$3,016	$2,395
>400% FPL	$2,780	$2,585	$2,776	$2,792	$2,704	$2,511

Note: FPL = federal poverty level.
Data: Estimates from RAND COMPARE microsimulation model.

Finally, Table A.4 shows the net deficit impact of the combined scenario relative to the other scenarios. Combining all four policies increases the federal deficit by $88.5 billion in 2018, only marginally less than the cost-sharing tax credit if implemented alone.

Overall, combining the policies has little added impact on either insurance enrollment or the federal deficit relative to the cost-sharing tax credit if implemented alone. However, combining the options may slightly reduce out-of-pocket spending among people eligible for APTCs on the ACA's marketplaces relative to the cost-sharing tax credit scenario.

Appendix Table A.4. Net Deficit Impact (in Billions) of Clinton's Proposed Reforms Relative to the Affordable Care Act, 2018

	ACA	Add cost-sharing credit	Reduce maximum contribution	Reduce maximum contribution and fix family glitch	Add public option	*All four* policies combined
Changes to federal outlays and revenues, relative to ACA						
Medicaid and CHIP	$0.0	–$25.0	$0.0	$0.3	–$0.2	–$24.4
Premium tax credits*	$0.0	$3.5	$3.7	$9.1	–$0.8	$11.8
Cost-sharing reductions	$0.0	$1.0	$0.2	$0.5	$0.3	$1.9
Cost-sharing tax credits	$0.0	$110.8	$0.0	$0.0	$0.0	$100.6
Total outlays	$0.0	$90.3	$3.9	$10.0	–$0.6	$88.9
Additional federal revenues (negative values increase the federal deficit)						
Individual mandate	$0.0	–$3.4	$0.3	–$0.5	$0.1	–$2.1
Employer mandate	$0.0	$3.3	$0.1	$0.5	$0.0	$2.5
Total revenue	$0.0	–$0.1	$0.4	$0.0	$0.1	$0.4
Net change to federal deficit	$0.0	$90.4	$3.5	$10.0	–$0.7	$88.5

Notes: Impacts that increase the federal deficit are shown in red, while those that decrease or have no effect on the federal deficit are shown in black. Changes in outlays and revenues are estimated relative to the ACA. We do not show the ACA's changes to Medicare payment or revenues generated through new taxes and fees; these revenue-generating provisions remain roughly constant across scenarios and thus have no marginal impact on the deficit relative to the ACA. * The Congressional Budget Office models premium tax credits as a reduction in revenue if they reduce taxes owed and an increase in outlays if the credit exceeds tax liabilities. For simplicity, we count the entirety of the premium tax credit as increase in outlays.
Data: Estimates from RAND COMPARE microsimulation model.

COMPARISON TO OTHER STUDIES

Several other studies have estimated the effects of health reform policies that are similar to those proposed by Clinton. The Urban Institute (Blumberg and Holahan 2015) analyzed a policy that would reduce the maximum premium contribution on the health insurance marketplaces to 8.5 percent of income, while simultaneously pegging APTCs to the second-lowest-cost gold plan premium and increasing cost-sharing reduction amounts. Over a 10-year period from 2016 to 2025, Urban estimated that these policies would increase the federal deficit by $221 billion while reducing median out-of-pocket spending by approximately 30 percent for the lowest-income families purchasing coverage on the ACA's marketplaces. The Urban Institute further estimated that addressing the family glitch along with these reforms would increase the deficit by an additional $117 billion. While our results are qualitatively similar to those of the Urban Institute, our analyses are not directly comparable because Urban considered a different suite of reforms and estimated the deficit impact over a longer time. The Committee for a Responsible Federal Budget (CRFB 2016) argues that Clinton's proposed policies are "more modest and cheaper" than those estimated by Urban.

The CBO has analyzed several proposals to implement a public option on the health insurance exchanges. In a 2010 letter to Rep. Fortney "Pete" Stark, the CBO estimated that a public option would lead to increased enrollment on the health insurance marketplaces but no net change in insurance coverage because of offsetting reductions in employer coverage (Elmendorf 2010). They further estimated that the public option would reduce the federal deficit by $53 billion between 2010

and 2019. A 2013 update (CBO 2013) concluded that the net effect budgetary impact of the public option would be to reduce the deficit by $17 billion in 2018 with no change in total insurance enrollment.

We estimate that the public option would marginally increase health insurance enrollment, while marginally decreasing the federal deficit relative to the ACA. One key difference between our analysis and the CBO's is that the CBO incorporates revenue increases stemming from reductions in employer coverage, which result in higher wages and increased income and payroll tax revenue. While we do not incorporate income and payroll tax offsets into our model, COMPARE estimates little change in employer-sponsored coverage stemming from the addition of a public marketplace option. To date, there is little evidence that the health reforms introduced by the ACA have led to declines in employer coverage (Claxton et al. 2015).

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NOTES

[1] Other sources of coverage include Medicare for the nonelderly with qualifying conditions and military-related sources of coverage such as TRICARE.

[2] Our approach does not include two states, Alaska and Louisiana, which expanded their Medicaid programs more recently. This omission has little effect on the results given the relatively small size of the Medicaid-eligible populations in these states, and additional adjustments that we make to better match Medicaid enrollment totals reported by CMS.

[3] The 2015 Current Population Survey Annual Social and Economic Supplement estimates 58.4 million Medicaid and CHIP enrollees under the age of 65 in 2015.

[4] As of July 14, 2016: https://www.hillaryclinton.com/issues/health-care/.

[5] See The Family Coverage Act (S. 2434), summary available here: http://www.franken.senate.gov/files/documents/140605FamilyGlitch.pdf.

[6] In other words, $calibration_{public,k} = 0.86 * calibration_{private\text{-}nongroup,k}$

[7] Our point estimates show that combining the options leads to a very slight decrease in coverage relative to the cost-sharing tax credit implemented individually. This reflects complex dynamics in the employer market under the combined scenario. Specifically, average employer premiums increase slightly in the combined scenario, and offer rates among small firms decrease. These dynamics reflect small changes in the composition of people who chose to enroll in employer coverage in the model. Because the model is based on a sample of individuals, and workers in the model must be matched to firms using an imputation procedure, we are not confident that this minor reduction in enrollment result is statistically meaningful.