For a To the Point *post related to this appendix, please see: Insuring Younger Adults through the ACA's Marketplaces: Options to Expand Enrollment*

Technical Appendix: Rate Banding Analysis

By Evan Saltzman and Christine Eibner

This technical appendix provides an overview of the methods we used to estimate the impact of relaxing the ACA's age rating regulations and providing enhanced advance premium tax credits (APTCs) to young adults. In the first section, we provide a general overview of COMPARE. We then discuss the ACA's rating rules and describe how we model changes to the rating bands. Next, we describe how we model the enhanced APTC scenario. Finally, we provide some sensitivity tests and additional results.

Overview of COMPARE

COMPARE is a microsimulation model that uses economic theory and data to estimate the effects of health policy changes. 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 datasets 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, as well as data on high-cost claims from the Society of Actuaries. The National Health Expenditure Accounts adjustment accounts for the fact that the MEPS underestimates total medical spending levels, while the Society of Actuaries 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, using the following process. First, 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; if premiums are low, additional individuals may enroll. This iterative process continues until the model achieves equilibrium, defined such that premiums and enrollment decisions do not change 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:

$$(1)\quad U_{ijk} = u\left(H_{ij}\right) - E\left(OOP_{ij}\right) - p_{ij}^{H} - \frac{1}{2}rVAR\left(OOP_{ij}\right) - Penalty_{j} + Calibration_{jk}$$

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 forego 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 for being uninsured. To better match post-2014 data on enrollment in the individual market, 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 (U.S. 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.

The term "calibration$_{jk}$" adjusts utilities to match enrollment patterns observed in pre-ACA data; the term accounts for non-pecuniary 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

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

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 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 Small Business Health Options Program 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 due to 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 line can obtain tax credits on the marketplaces. However, those with incomes below the federal poverty line 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 due to stigma, lack of information, or transaction costs associated with enrolling. However, we allow the Medicaid calibration parameter to vary pre- and post-ACA implementation, to account for the possibility that previously eligible individuals newly enrolled in Medicaid in 2014, due to increased publicity, awareness of the law, enrollment outreach, and other

[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.

factors. Specifically, we calibrate the model to match pre-ACA Medicaid enrollment levels, and then add 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]

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 under 30 or who qualify for a hardship exemption from the individual mandate. According to a 2015 CMS fact sheet, less than 1 percent of all marketplace enrollees have selected catastrophic coverage (Centers for Medicare & Medicaid Services, 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 21 and over, with a separate age-band for children and young adults under 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 applied a minor ratio adjustment to ensure that marketplace premiums in COMPARE matched 2017 premiums as reported by the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation.[4] We further assumed that premiums would increase by 10 percent from 2017 to 2018, based on the average of the premium increases observed from 2014 to 2015, 2015 to 2016, and 2016 to 2017.

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 level 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 level can also 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

[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] COMPARE predicted that the monthly premium for a 40 year old non-smoker would be $353 in 2017; the actual premium was $361. Thus, our ration adjustment was 1.022. More discussion of 2017 premiums can be found here: https://aspe.hhs.gov/sites/default/files/pdf/212721/2017MarketplaceLandscapeBrief25.pdf

200 percent, or 200 percent and 250 percent of poverty, respectively. Because out-of-pocket spending enters the individual's utility function, individuals receiving CSRs are more likely to purchase coverage.

Comparison to CBO

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 that 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.

Model Updates

In 2016, we updated the model to better align results with observed, post 2014 enrollment outcomes. In particular, in the 2016 version of the model we decrease the individual mandate penalty by a factor of 80 percent to account for tax non-compliance, and increase the post-ACA Medicaid calibration parameter by $200 to account for increased awareness of eligibility. These model adjustments are described in more detail above. 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. Because of these updates, the results presented in the current analysis differ slightly from our prior estimates of the impact of 5-to-1 rate banding.

Overview of Rating Rules

The ACA introduced a large number of reforms to insurer practices in the individual market. Prior to the ACA, insurers could deny individuals coverage or charge higher prices to individuals with pre-existing conditions. Both practices have been banned under the ACA. In addition, the ACA only allows insurers to charge differential premiums on the basis of an enrollee's geographic residence location, family size, smoking status, and age. States have some discretion in defining geographic rating areas, but they are typically based on metropolitan statistical areas (MSAs), three-digit ZIP codes (that is, ZIP code groupings based on the first three digits of the ZIP code), or counties. Insurers are permitted to charge smokers up

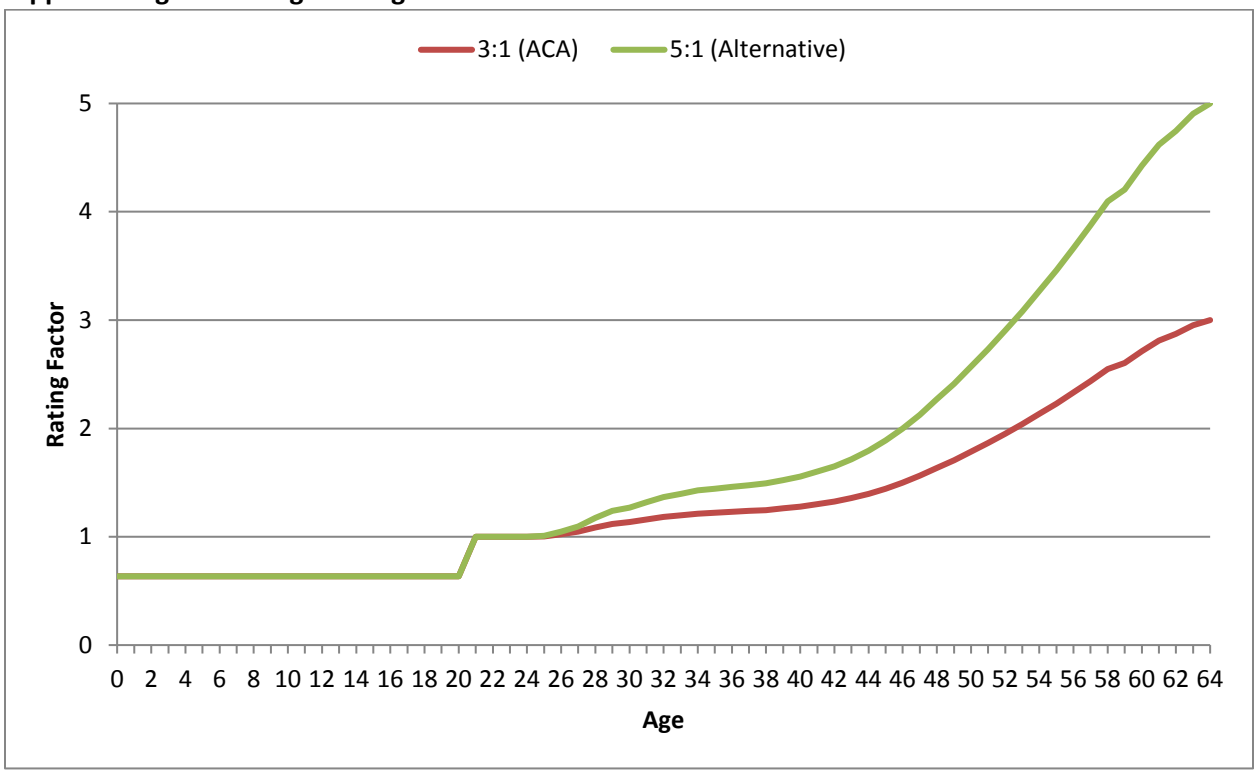
to 50 percent more than nonsmokers, although states are allowed to tighten the differential (e.g., New York does not allow smokers to be charged any more than nonsmokers).

Rating by age is the focus of our analysis. Under the ACA, insurers can charge a 64-year-old up to three times as much as a 21-year-old, a policy known as 3-to-1 rate banding. CMS has suggested a default rating curve that increases at an increasing rate with age, as shown by the red curve in Figure 1 (CMS, 2013). Under the CMS default curve, premiums are flat between the ages of 21 and 24, then gradually increase with age. The rating factor indicates the multiple of the premium for a 21-year-old that is charged for a given age. For instance, a 40-year-old has a rating factor of 1.278, so is charged a premium that is 1.278 times the premium for a 21-year-old. A 64-year-old has a rating factor of 3, implying a premium that is three times as much as the premium for a 21-year-old. Individuals under age 21 are charged only 63.5 percent of the premium that a 21-year-old is charged. Hence, if children are included, premiums can vary by a factor of 4.7 across the full age distribution.

The CMS default rating curve was developed by the Center for Consumer Information and Insurance Oversight Office of the Actuary in consultation with the National Association of Insurance Commissioners (see 78 FR 13405).[5] The ACA allows states to tighten the age-rating bands (and propose adjustments to the rating curve to CMS), but states cannot relax the bands. For example, Massachusetts has tightened the rate band to 2 (i.e., a 64-year-old can be charged up to two times as much as a 21-year-old). Insurers can also tighten the age factors they apply to their community rates, but evidence suggests that all insurers adopt their state's default age-rating curve. America's Health Insurance Plans, a trade organization for health insurers, has argued that 3:1 rate banding could destabilize insurance risk pools, and has advocated for loosening the band to 5:1 or even 6:1.

[5] Available at: https://www.federalregister.gov/articles/2013/02/27/2013-04335/patient-protection-and-affordable-care-act-health-insurance-market-rules-rate-review#h-19

Appendix Figure A.1: Age-Rating Curves



Notes: The 3-to-1 rating curve is based on the curve proposed by CMS, and the 5-to-1 rating curve is derived by the authors, using equation 1 described later in this report.

Modeling Rate Banding

As discussed previously, the total premium in the individual market is based on enrollee age, smoking status, and the market rating reforms implemented under the ACA. We first compute the average spending level in the risk pool and apply an administrative loading factor to obtain the average enrollee premium. In the baseline ACA scenario, we use the weights of the enrolled population and the rating factors on the red curve of Figure 1 to calculate premiums by age to model 3-to-1 rate banding. The final premium schedule satisfies two conditions: 1) 3-to-1 rate banding and 2) the linear combination of the population weights and the premium schedule equals the average enrollee premium.

In the alternative scenario, we relax the rate banding to 5-to-1 as depicted by the green curve in Figure 1. The rating factors from the default ACA rating curve are scaled using the following formula:

$$\text{Eqn. 1: } 5 \; to \; 1 \; rating \; factor = \left(2 \times (3{:}\,1 \; rating \; factor)\right) - 1$$

Hence, for a 40-year-old, the rating factor increases from 1.278 to 1.556 under 5-to-1 rate banding. For a 64-year-old the rating factor increases to 5 from 3. We continue to assume that children and young adults under age 21 will be charged 63.5 percent of the premium charged to a 21-year-old under 5-to-1 rate banding. The formula in equation 1 is designed to preserve the general shape of CMS' standard

default rating curve, while steepening the gradient so that a 64-year-old is now charged 5 times as much as a 21-year-old.

Modeling Enhanced APTCs

Under the ACA, individuals and families are eligible for APTCs on the marketplaces if they have incomes between 100 and 400 percent of the federal poverty level and no access to an alternative affordable plan, e.g. through an employer, Medicaid, or CHIP. The APTC amount is equal to the premium for a benchmark silver plan in the individuals' rating area, minus a required percentage contribution that scales with income. For the 2017 plan year, the required percentage contribution ranged from 2.04 percent of income for those with incomes between 100 and 133 percent of the federal poverty level (FPL) to 9.69 percent of income for those with incomes between 300 and 400 percent of the FPL.

Based on a policy proposal offered by the White House, we model a $50 increase in the monthly APTC for eligible enrollees between the ages of 19 and 30. The credits scale down linearly for enrollees between the ages of 30 and 35. APTC eligible enrollees in the specified age-range receive the full amount of the enhancement, regardless of their income level, with the caveat that the total credit (original APTC + enhancement) may not exceed the cost of the second-lowest cost silver plan available to the enrollee.

Additional Results

Several metrics can be used to assess premium changes. In the main text of the analysis, we reported age-specific premiums for several age categories. Two other useful metrics include the enrollee-weighted average premium, which reflects average premium spending among the enrolled population, and the ACA-standardized premium, which reflects average premiums holding the age distribution of enrollees constant based on the distribution estimated in the unmodified ACA scenario. Appendix Table A.2 reports premium estimates for each of these metrics.

The enrollee-weighted average premium is 5.9 percent lower under 5-to-1 rate banding relative to the ACA, primarily because the age composition of enrollees changes substantially under this policy—more young people enroll and some older people exit. However, the premium that ACA individual market enrollees would have paid if there had been no change in the enrollee composition, referred to in Appendix Table A.2 as the ACA-standardized average premium, is actually 5.8 percent higher. The increase in the ACA-standardized average premium under 5-to-1 rate banding is the result of less favorable underwriting for older adults, who represent a larger share of the enrollee population under the ACA. By contrast, premiums paid by ACA individual market enrollees under the enhanced APTC scenario are roughly the same as under the ACA.

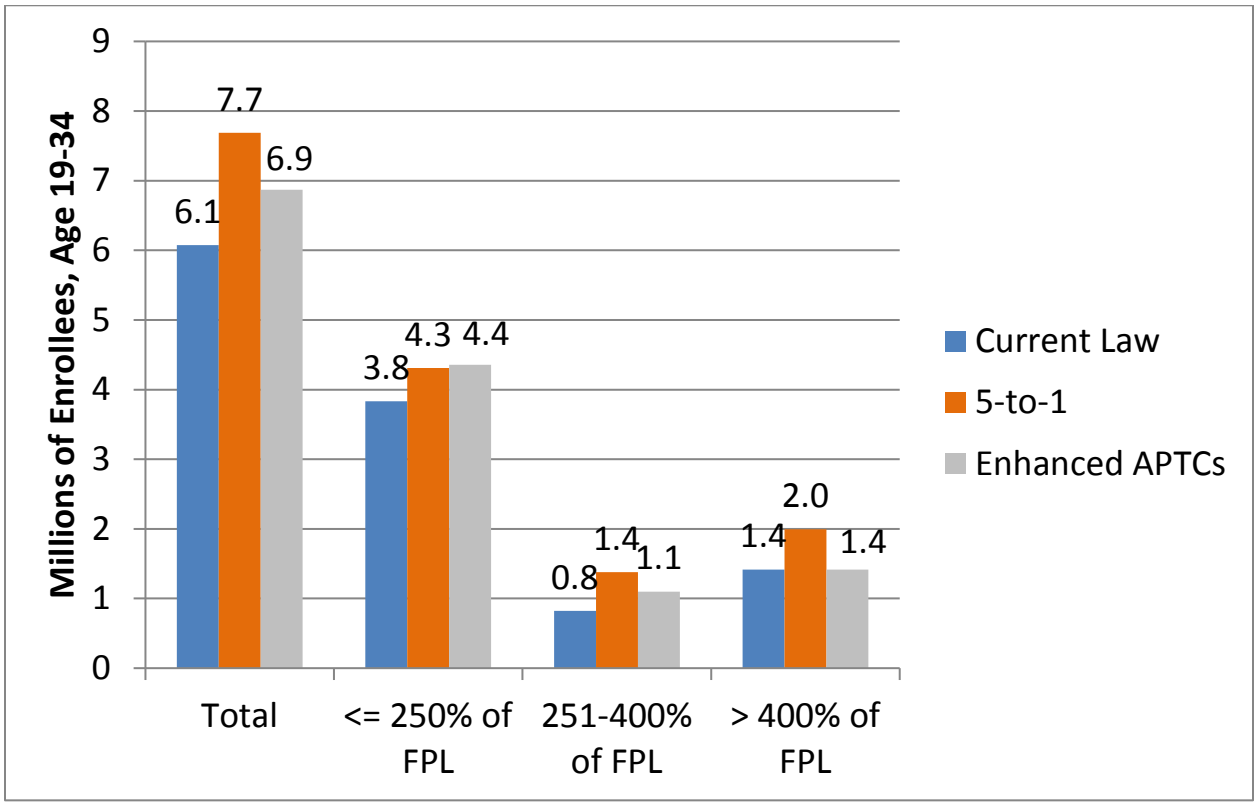
Appendix Table A.2: Alternative Premium Measures, 2018

	Current Law	5-to-1 Rate Banding	Enhanced APTCs
Enrollee Weighted Average Premium	$5,835	$5,487	$5,730
ACA-Standardized Average Premium	$5,835	$6,132	$5,801
Age Specific Premiums			
21-year-old	$3,728	$2,894	$3,707
30-year-old	$4,232	$3,675	$4,207
40-year-old	$4,765	$4,503	$4,737
50-year-old	$6,659	$7,443	$6,620
64-year-old	$11,185	$14,469	$11,120

Source: RAND COMPARE estimates.

In addition to the changes in the age distribution of enrollees reported in the main text, we also analyzed how the income distribution of young adult enrollees in the individual market varies under the two proposals (Appendix Figure A.2). Under 5-to-1 rate banding, we estimate an increase in enrollment among all young adults, including those with incomes above 400 percent of the federal poverty line. Because the enhanced APTC policy targets solely those who are eligible for APTCs, it only affects enrollment among young adults with incomes below 400 percent of FPL.

Appendix Figure A.2 – Estimated Number of Young Adults (Age 19-34) Enrolled in Individual Market by Income, 2018 (in Millions)



Source: Estimates from the COMPARE microsimulation model

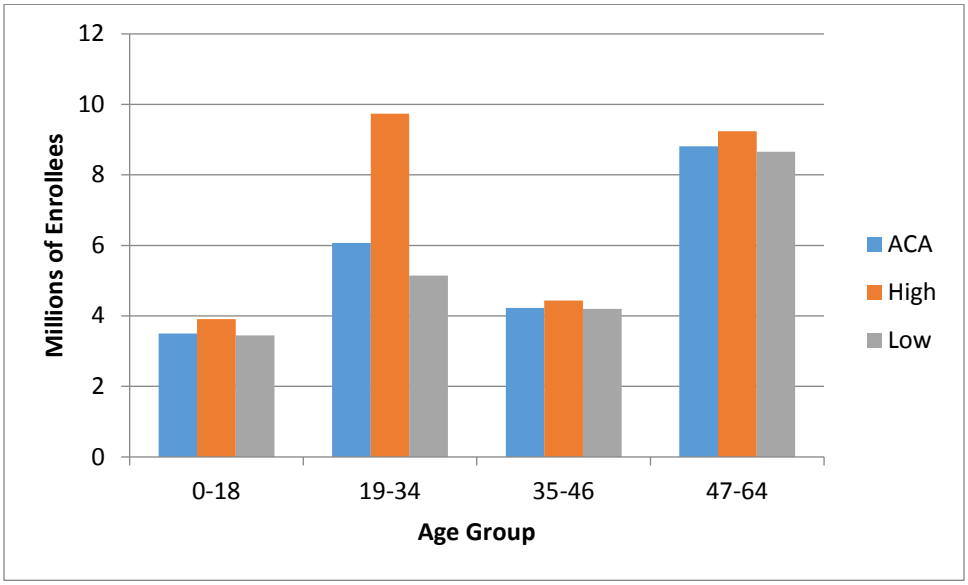
Sensitivity of the Results

For sources of insurance coverage that were available prior to the ACA, such as employer-sponsored insurance (ESI) and Medicaid, our calibration process provides a reasonable estimate of unobserved (to the modeler) factors influencing consumer utility, such as stigma, the extent of benefits, network breadth, and customer service. Because post-2014 data on off-marketplace individual market enrollment have not yet been released, and because perceptions about the individual market may evolve as the ACA matures, we need to make assumptions to set the calibration constants ($Calibration_{jk}$) for post-ACA individual market coverage. In our baseline ACA analysis, we assume that these calibration constants will be the same as for pre-ACA individual market coverage. However, if post-ACA networks are narrow compared to networks under pre-ACA individual market plans, or if there is stigma associated with marketplace coverage, then our baseline projections may overestimate post-ACA individual market enrollment. Conversely, if ACA-compliant individual market plans provide more comprehensive benefits than pre-ACA plans (many of which were "mini-med" plans with low caps on the annual amount the plan would cover), then our baseline projections may underestimate enrollment.

To test the sensitivity of our results to the assumed calibration constants, we constructed two sensitivity simulations runs. In the "high" run, we assumed that the post-ACA individual market calibration constants for young adults age 19 to 34 were equal to the average of the calibration constants for employer coverage and for pre-ACA individual market coverage. In the "low" run, we assumed that the

post-ACA individual market calibration constants for young adults age 19 to 34 were equal to the average of the calibration constants for Medicaid and for pre-ACA individual market coverage. In Figure A.3, we assess how our assumptions affect enrollment among young adults, as well as enrollment for all other age groups. In our baseline ACA results, approximately 6 million young adults enroll in individual market coverage. Our sensitivity runs indicate that as few as 5 million could enroll if unobservable factors affecting individual market coverage decisions more closely resemble unobserved factors affecting Medicaid enrollment, while as many as 9.5 million young adults could enroll if the post-ACA individual market is viewed more like employer coverage. Because young adults have lower expenses and help to keep premium growth in check, changes in enrollment patterns among young adults have small but meaningful impacts on other age groups. Given lackluster enrollment among young adults in the first three open enrollment periods, it is somewhat reassuring that our baseline estimates are closer to the lower end of the sensitivity range.

Appendix Figure A.3 –Sensitivity Analysis: Estimated Number of People Enrolled in Individual Market by Age, 2018 (in Millions)



Source: Estimates from RAND COMPARE.

In addition, we assessed whether the comparison of 5-to-1 age rating to enhanced APTCs is sensitive to the calibration constants for young adults. In particular, we compared the ACA, 5-to-1 age rate banding, and enhanced APTCs assuming that young adults have a low proclivity to purchase individual market insurance, as in the "low run" above. Table A.3 indicates that coverage levels are similar in the 5-to-1 age rate banding and enhanced APTCs, with the former covering 0.3 million more people. Similarly, additional federal spending on premium tax-credits and cost-sharing reductions is far less in the enhanced APTC scenario than in the 5-to-1 rating scenario (Table A.4). Hence, our bottom line result does not appear to depend on the assumed calibration constants.

Appendix Table A.3 –Sensitivity Analysis (Low Run): Estimated Enrollment by Source of Coverage, in Millions, 2018 (in Millions)

	Current Law	5-to-1 Age Rate Banding	Enhanced APTCs
Total insured	250.4	251.5	251.2
Employer insurance	155.6	155.4	155.6
Individual market, including marketplaces	21.6	23.4	22.5
Medicaid	60.9	60.5	60.8
Other	12.3	12.3	12.3
Uninsured	26.0	24.9	25.2

Source: Estimates from RAND COMPARE.

Table A.4 – Sensitivity Analysis (Low Run): Estimated Change in Federal Deficit Relative to Unmodified ACA, 2018

Outcome	Net Effect on Cost of ACA (in billions)	
	5-to-1	Enhanced APTCs
Spending on APTCs and cost-sharing reductions	$10.6	$2.2
Loss of individual mandate revenue	$0.1	$0.1
Total change in spending	$10.7	$2.3

Source: COMPARE Model Estimates

Effective Actuarial Values

The ACA requires that actuarial values are calculated for a standardized population, including people of all ages. However, because young adults have different expenditure patterns than older adults, this could mean that the "effective" AV varies by age. Table A.5 indicates that younger individual market enrollees tend to pay a slightly larger share of their expected costs than older individuals, for example, because young adults are systematically less likely to meet the deductible and therefore more likely to pay for 100 percent of their health care costs in any given year. However, the differences are not large.

Appendix Table A.5: Effective Plan Actuarial Values for a Silver Plan by Age Group

Age Group	Effective Actuarial Value
0-18	64%
19-34	70%
35-46	69%
47-64	71%

Source: Estimates from COMPARE

REFERENCES

Bernard D., Selden TM., Pylypchuk YO. Aligning the Medical Expenditure Panel Survey to Aggregate U.S. Benchmarks, 2010. January 2015. http://meps.ahrq.gov/mepsweb/data_files/publications/workingpapers/wp_15002.pdf.

Centers for Medicare & Medicaid Services, "Sub-Regulatory Guidance Regarding Age Curves, Geographical Rating Areas, and State Reporting." February 25, 2013. As of July 29, 2015: https://www.cms.gov/CCIIO/Resources/Files/Downloads/market-reforms-guidance-2-25-2013.pdf

Centers for Medicare & Medicaid Services, "Fact Sheet: March 31, 2015 Effectuated Enrollment Snapshot," June 2, 2015, 2015. As of July 1, 2015: http://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2015-Fact-sheets-items/2015-06-02.html

Cordova, Amado, Federico Girosi, Sarah Nowak, Christine Eibner, Kenneth Finegold, "The COMPARE Microsimulation Model and the US Affordable Care Act," *International Journal of Microsimulation*, 2013, 6(3):78-117.

Eibner, Christine, Federico Girosi, Amalia Miller, Amado Cordova, Elizabeth A. McGlynn, Nicholas M. Pace, Cart C. Price, Raffaele Vardavas, Carole Roan Gresenz. "Employer Self-Insurance Decisions and the Implications of the Patient Protection and Affordable Care Act as Modified by the Health Care and Education Act of 2010 (ACA)." *RAND Corporation*, 2011. As of July 3, 2015: http://www.rand.org/content/dam/rand/pubs/technical_reports/2011/RAND_TR971.pdf

Gabel, Jon R., Ryan Lore, Roland D. McDevitt, Jeremy D. Pickreign, Heidi Whitmore, Michael Slover and Ethan Levy-Forsythe. "More Than Half Of Individual Health Plans Offer Coverage That Falls Short Of What Can Be Sold Through Exchanges As Of 2014." *Health Affairs*, 31, no.6 (2012):1339-1348

Goldman, Dana P, Joan L Buchanan, Emmett B Keeler, "Simulating the Impact of Medical Savings Accounts on Small Business," *Health Services Research*, 2000, 35(1 Pt 1):53–75.

Internal Revenue Service, Rev. Proc. 2014-46, 2014. As of July 1, 2015: http://www.irs.gov/pub/irs-drop/rp-14-46.pdf

Internal Revenue Service, Rev. Proc. 2015-15, 2015. As of July 1, 2015: http://www.irs.gov/pub/irs-drop/rp-15-15.pdf

Internal Revenue Service, "The Tax Gap: Tax Gap Estimates for the Years 2008-2010." As of November 21, 2016: https://www.irs.gov/uac/the-tax-gap

Kaiser Family Foundation, Current Status of State Medicaid Expansion Decisions, June 22, 2015. As of July 1, 2015: http://kff.org/health-refor m/slide/current-status-of-the-medicaid-expansion-decision/