

STABILIZING THE INDIVIDUAL HEALTH INSURANCE MARKET

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Report Qualifications, Assumptions and Limiting Conditions

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Executive Summary

This report contains three sections and two appendices. The first section is this executive summary. In Section 2, we provide an overview of the individual health insurance market and its current challenges. In Section 3, we discuss the options available to help stabilize this market, and we use our micro-simulation model to illustrate the impact these stabilizers could have on the market. In the appendices, we provide background regarding the Oliver Wyman Healthcare Reform Micro-Simulation Model (HRMM) and the methods underlying our estimates.

Our primary findings are the following:

- The Affordable Care Act (ACA) has led to a significant increase in the size of the individual market since 2014. At the same time, insurers participating in the individual market have experienced significant financial losses since 2014 and have been increasing premiums in an effort to stem these losses.
- The requirement that insurers provide coverage to all individuals at the same price, regardless of the risk they represent, has led to higher premiums, and this increase has been borne by individuals purchasing coverage in the individual market as well as by the federal government through increased advance payments of premium tax credit spending (APTCs). We estimate this cost will be roughly \$15 billion per year from 2018 to 2020, a considerable burden on individual market participants – and a burden that could prevent some individuals from purchasing coverage.
- For 2018, insurers in many states have already been increasing premiums significantly, in part due to regulatory uncertainty or exiting the market entirely. These premium increases have the potential to further reduce the number of insureds, which leads to further increases in the cost of providing coverage to these insureds going forward.
- Market stabilization proposals currently under consideration include appropriating and paying for the enhanced benefits insurers provide to low-income insureds through cost sharing reductions; strong enforcement of the individual mandate; external funding of \$15 billion per year; and the elimination of the 9010 HIT fee. Our analysis projects that each of these could help increase enrollment in the individual market and produce significant savings in APTCs. Specifically we find that the cited market stabilization provisions, combined, would increase enrollment by roughly 2 million individuals, reduce average premiums by more than 20 percent, and cost relatively little, when considering federal outlays for CSR spending and APTCs.

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Background

Overview of the individual market

The Patient Protection and Affordable Care Act (ACA) fundamentally changed the operation of the individual health insurance market.¹ Enrollment in the individual market increased from pre-ACA levels of approximately 11 million enrollees to 17 million in 2016 (Table 1), with 14.8 million,² or 86 percent of the total market, enrolled in ACA compliant plans. The remaining 14 percent were enrolled in transitional or grandfathered plans (referred to here as non ACA compliant plans).^{3,4}

**Table 1 - Average Enrollment in the Individual Market
in Millions**

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-------------------------------------|------|------|------|------|------|------|
| ACA Compliant | 0.0 | 0.0 | 0.0 | 8.4 | 13.8 | 14.8 |
| - On exchange enrollment estimated | 0.0 | 0.0 | 0.0 | 6.8 | 9.6 | 10.0 |
| - Off exchange enrollment estimated | 0.0 | 0.0 | 0.0 | 1.5 | 4.2 | 4.8 |
| Non ACA Compliant | 11.1 | 10.7 | 10.9 | 6.9 | 3.7 | 2.4 |
| Total | 11.1 | 10.7 | 10.9 | 15.3 | 17.5 | 17.2 |

Source: Member months statistics from Statutory Reporting, CA DMHC, CMS Summary of Risk Adjustment Transfers and MLR rebate reports; Excludes student, minimed or other non major medical coverage types.

Premium subsidies

Under the ACA, premium subsidies (advance premium tax credits, or APTCs) are determined based on the difference between the cost of the second-lowest cost silver plan (SLCSP) and the applicable percentage of an individual's income. The applicable percentage is set in statute and varies with the individual's income, generally increasing as income increases. Therefore, individuals eligible for APTCs are essentially shielded from increases in the gross premium because the premium they pay for the SLCSP after the APTC is applied is essentially the applicable percentage of their income. For individuals eligible for APTCs, the federal government absorbs the increase in premiums through higher APTCs.

¹ <https://www.gpo.gov/fdsys/granule/PLAW-111publ148/PLAW-111publ148/content-detail.html>

² Billable Member months in Individual, Catastrophic and portion of the merged market in VT based on CMS 2016 Risk Adjustment Summary available at

<https://www.cms.gov/CCIIO/Programs-and-Initiatives/Premium-Stabilization-Programs/Downloads/Summary-Reinsurance-Payments-Risk-2016.pdf>

³ <https://www.cms.gov/CCIIO/Resources/Regulations-and-Guidance/Downloads/transition-to-compliant-policies-03-06-2015.pdf>

⁴ <https://www.cms.gov/CCIIO/Resources/Regulations-and-Guidance/Downloads/transition-to-compliant-policies-03-06-2015.pdf>

In Table 2, we show the number of people eligible and total federal spending for APTCs for 2014 through 2016.

Table 2 - Premium Subsidy Enrollment and Spending in the Individual Market

| APTC Estimates | 2014 | 2015 | 2016 |
|--|-------------|-------------|-------------|
| Average APTC Per Member Per Month (PMPM) | \$276 | \$270 | \$290 |
| APTC Average Membership in Millions | 4.72 | 8.04 | 8.40 |
| APTC Spending in Billions | \$15.6 | \$26.1 | \$29.2 |

Source: CMS reports of average APTC and enrollment for 2014/2015 from data.cms.gov and 2016 Average Monthly Effectuated Enrollment report.

In 2017, the average increase in the benchmark premium was 22 percent.⁵ The Centers for Medicare and Medicaid Services (CMS) estimates the February 2017 nationwide average APTC PMPM at \$371, a 28 percent increase from 2016. Assuming average APTC enrollment of 8.4 million in 2017, we estimate that total spending for APTCs could increase to \$37 billion in 2017.

Cost sharing reduction payments

The ACA requires insurers to provide enhanced benefit plans to individuals with incomes between 100 percent and 250 percent of the federal poverty level (FPL). These enhanced benefit plans are referred to as cost sharing reduction (CSR) plans. In 2016, about 5.6 million individuals were enrolled in CSR plans.⁶ The Congressional Budget Office (CBO) estimates that the federal spending on CSR payments will be approximately \$10 to \$12 billion per year in fiscal years 2018 to 2020.⁷

Challenges in the individual market

Insurers participating in the individual market report large losses over the last several years. Amidst continued regulatory uncertainty, insurers are expected to continue withdrawing from the market, leading to less choice and higher premiums for enrollees in the individual market, and higher rates of uninsured when people opt out due to cost.

Insurers' financial instability

Underwriting losses in the individual market increased significantly in 2014 relative to 2013, and have remained high through 2016 (Table 3). These losses include payments made to insurers under the transitional reinsurance program in 2014 through 2016, totaling approximately \$20 billion. Most publicly owned insurers and most Consumer Operated and Oriented Plans (COOP), have exited the individual market, become insolvent, or stopped issuing new plans.⁸

⁵ ASPE report, Table 2 available at <https://aspe.hhs.gov/system/files/pdf/212721/2017MarketplaceLandscapeBrief.pdf>

⁶ <https://downloads.cms.gov/files/effectuated-enrollment-snapshot-report-06-12-17.pdf>

⁷ <https://www.cbo.gov/sites/default/files/recurringdata/51298-2017-01-healthinsurance.pdf>

⁸ <http://www.kff.org/health-reform/issue-brief/insurer-participation-on-aca-marketplaces-2014-2017/>

For 2017, insurers had more pricing experience and much better information on the insured population, and insurers adjusted their rates accordingly.

**Table 3 - Underwriting Gain/Loss in the Individual Market
Excluding CA DMHC filers**

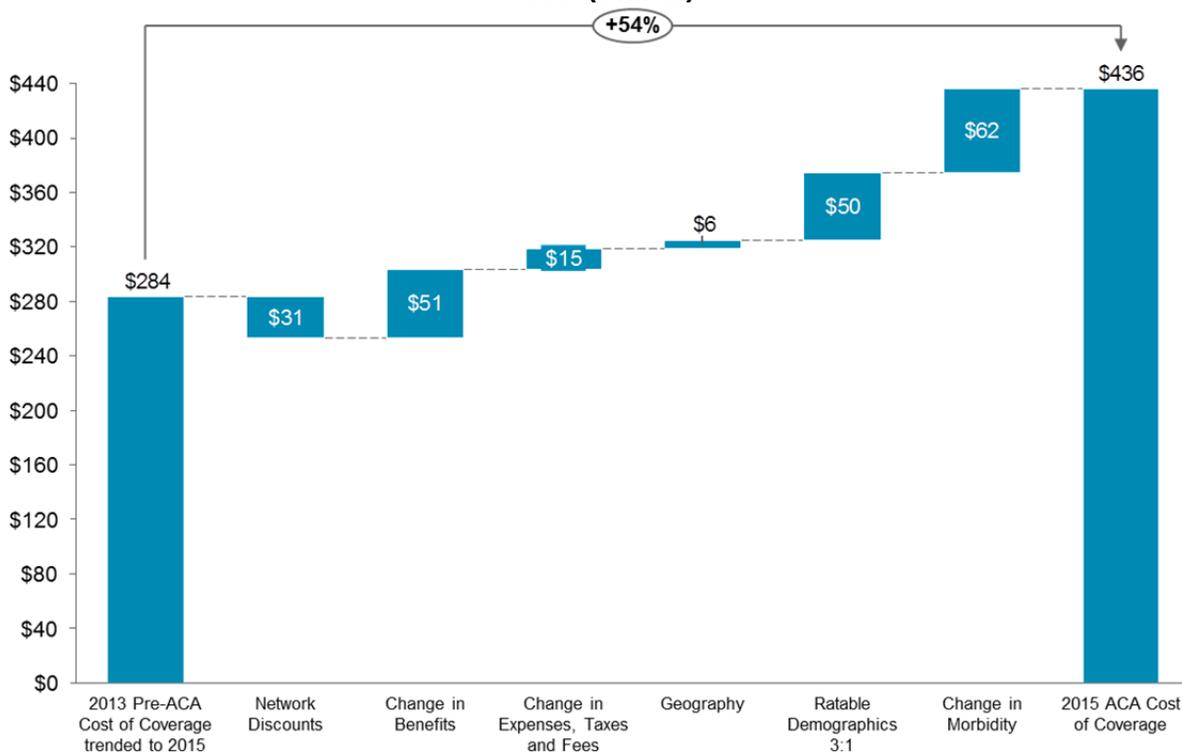
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------------------------|--------|--------|--------|--------|--------|--------|
| Underwriting Gain/Loss PMPM | -\$2 | -\$5 | -\$9 | -\$22 | -\$32 | -\$26 |
| Average Membership | 10.7 | 10.3 | 10.6 | 13.6 | 15.4 | 15.1 |
| Underwriting Gain/Loss in Billions | -\$0.3 | -\$0.6 | -\$1.2 | -\$3.6 | -\$6.0 | -\$4.7 |

Source: Underwriting gain/loss divided by member months statistics from Statutory Reporting - Supplemental Health Care Exhibit

Forces increasing the cost of coverage under the ACA

To illustrate the forces behind the losses and premium increases in the individual market since 2013, we have compared the average pre-ACA cost of coverage, trended to 2015, to the cost of coverage reported by insurers in the 2015 MLR reports insurers are required to file. 2015 is the most recent data available. We separated the change in the cost of coverage into its component parts, such as network discounts, additional benefits, taxes and fees, changes in actuarial value, demographic and geographic changes and remaining morbidity. Note that there are likely additional factors which are not included in our estimate, for example increased utilization resulting from more generous benefits, and changes in medical management. These factors could alter our estimate of the effect of morbidity. However, in aggregate we believe that they would not impact our results significantly.

Figure 1 - Forces Resulting in Increased Cost of Coverage in the Individual Market under the ACA (PMPM)



As we show in Figure 1, the ACA resulted in an increase in the average cost of coverage of \$152, or 54 percent. Some of the increase comes from an increase in benefits (both an expansion in the set of benefits covered and more generous coverage of those benefits). Also contributing is a change in demographics to an older population, new taxes and fees, and a shift in the location of covered members. However, the single largest factor we identified is an increase in morbidity.

The morbidity increase is the result of policymakers requiring insurers to accept all enrollees during open enrollment (and applicable special enrollment periods), the prohibition against reflecting the health risk an individual represents in setting the individual's premium, and the requirement that premiums vary by age by no more than 3:1.

There is a cost to requiring guaranteed access to coverage at rates that do not reflect the individual's risk other than age, and then by no more than 3:1 for age. Currently, this cost, which could be considered a societal "good," is entirely captured in premiums for coverage offered in the individual market. As we show in Figure 1, we estimate this cost to be approximately \$62 PMPM or \$744 per covered person per year in 2015 and approximately \$10 billion in total for the 13.8 million individuals purchasing coverage in the ACA compliant, individual market in 2015. Trending this amount from our 2015 estimate to 2020 at a 7 percentage annual trend, we get an estimate of \$14.4 billion for the cost of providing guaranteed access to coverage at rates that vary 3:1 for age. We use \$15 billion to represent this cost in this paper. We provide details regarding how we developed the values in Figure 1 in Appendix B. In Table 4, we show the build-up of this cost on an annual basis.

Table 4 - Projected Cost of Morbidity and Non-Ratable Demographics

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|--------|--------|--------|--------|--------|--------|
| ACA Compliant Average Enrollment (Millions) | 13.8 | 14.8 | 15.9 | 16.9 | 17.8 | 17.9 |
| Cost of Morbidity and Non-Ratable Demographics (PMPM) | \$62 | \$62 | \$62 | \$62 | \$63 | \$67 |
| Cost of Morbidity and Non-Ratable Demographics (PMPY) | \$744 | \$744 | \$741 | \$742 | \$754 | \$805 |
| Total Cost of Morbidity and Non-Ratable Demographics (Billions) | \$10.3 | \$11.0 | \$11.8 | \$12.6 | \$13.5 | \$14.4 |

Source: Oliver Wyman Healthcare Reform Micro-simulation Model as of Nov 2016
Due to rounding amounts may not add up.

In Section 3 of this report, we suggest that policymakers establish a dedicated source to fund this cost. Experience is showing that young, healthy individuals who are eligible for coverage in the individual market are not willing to shoulder the cost of providing access to coverage at rates that do not vary by health status and do not vary by more than 3:1 for age. This is leading to premium increases well in excess of medical trend and significant instability in the individual market.

Premium increases in 2018

It is now well documented that insurers underestimated the cost of the new ACA market and the majority set their premiums too low in 2014. It has taken them several years to recover. We had expected 2018 to be a period of relative stability with respect to premium rates. However, the factors listed below are contributing to premium increases well in excess of what they might have been in the absence of these factors.

End of moratorium on 9010 HIT fee

The Consolidated Appropriations Act of 2016 suspended the HIT fee for 2017.⁹ Absent new legislation, this fee will be reinstated in 2018. We have estimated reinstatement of this fee to be worth roughly 3 percent of premium in 2018.

Lax enforcement of the individual mandate

The Internal Revenue Service (IRS) announced changes to the processing of 2016 tax returns in the context of the Individual Shared Responsibility Provision under the ACA.¹⁰ The IRS continues accepting tax returns for processing in instances where a taxpayer does not indicate their health coverage status. Originally, the IRS was planning to reject these tax returns starting with the 2016 tax season. The IRS states that legislative provisions of the ACA law are still in force until changed by Congress, and taxpayers remain required to follow the law and pay what they may owe. It is not clear how the relaxed reporting enforcement will impact people's decision about whether to maintain individual ACA coverage in 2018. To the extent this does affect people's coverage decisions, we believe that the healthier-than-average insured population will be most likely to drop their ACA coverage. Further, we estimate that this has the potential to increase the average cost in the remaining pool. At this time, we expect that insurers will increase premiums in the range of 3 percent to 10 percent due to lax enforcement of the mandate.

Uncertainty surrounding CSR funding

Based on CBO estimates and our own estimate, CSR funding would be in the range of \$8 to \$10 billion in 2018, which is roughly equivalent to about 8 percent to 10 percent of the total premium volume in the individual ACA market, across all metal levels and on- and off-exchange. If CSR funding is not continued, we project that insurers would increase premium rates by 20 percent or more, if the increase is applied only to silver qualified health plans.¹¹ Insurers would most likely add additional margin for uncertainty in their premium development for 2018, as insurers cannot be certain how consumers will react to high-priced silver plans, relatively affordable gold plans, and potentially free bronze plans for individuals eligible for APTCs, in some markets.¹²

⁹ <https://www.congress.gov/bill/114th-congress/house-bill/2029/text>

¹⁰ <https://www.irs.gov/affordable-care-act/individuals-and-families/individual-shared-responsibility-provision>

¹¹ <http://www.kff.org/health-reform/issue-brief/the-effects-of-ending-the-affordable-care-acts-cost-sharing-reduction-payments/>

¹² http://health.oliverwyman.com/transform-care/2017/05/impact_defunding_CSR_payments.html

3

Market Stabilization

Stabilization proposals

As discussed in the previous section, there are several challenges related to stabilizing the individual, ACA market. In this section, we will discuss what we consider to be the most important stabilization strategies and we provide analysis of the projected impact of these approaches.

Funding for CSR plans

If CSR payments to insurers are discontinued, considerable uncertainty will be introduced into the market as insurers struggle to predict how their competitors and the insureds will respond. That uncertainty could disproportionately affect insurers that have a higher share of CSR-eligible enrollees compared to insurers with relatively low CSR enrollment. This potential outcome could reduce insurer participation and have a negative impact on enrollment and premiums. These premium increases could also lead to higher federal spending for APTCs. Similar to a Kaiser Family Foundation study¹³ and to a recent report by the Congressional Budget Office¹⁴, we estimate that any savings the federal government would realize from the non-payment of CSRs would be smaller than the increase in federal APTC spending.

Permanent external funding

Experience has shown that higher premiums discourage enrollment of the healthier and younger population; and that, in turn, leads to even higher premiums for remaining enrollees.¹⁵ With 2018 premiums expected to increase due to market factors and uncertainty, it will be necessary to protect against prohibitive premium increases for younger, healthier enrollees. A dedicated external funding mechanism, such as the transitional reinsurance program that ended in 2016, could serve to mitigate premium increases and bring additional younger, healthier insureds into the market. In fact, our micro-simulation modeling shows the lower premiums resulting from external funding would attract more non-subsidized individuals and a younger and healthier population. And a significant portion of the cost of the external funding will be offset by APTC savings as premiums decline.

Enforcing the mandate

Our modeling shows that lax enforcement of the individual mandate will reduce the individual enrollment to below 14 million in 2018. As a result, market-average premiums and APTC spending are likely to increase, as fewer younger and a less healthy population will be enrolled. However, a significant majority of the remaining enrolled population will receive APTC subsidies and will therefore be insulated from the premium increases. An enrollment waiting period is sometimes discussed as another means to encourage individuals to maintain continuous coverage. However,

¹³ <http://www.kff.org/health-reform/issue-brief/the-effects-of-ending-the-affordable-care-acts-cost-sharing-reduction-payments/>

¹⁴ Congressional Budget Office, *The Effects of Terminating Payments for Cost-Sharing Reductions*, August 15, 2017.

¹⁵ Finkelstein, A., Hendren, N., and Shepard, M., "Subsidizing Health Insurance for Low-Income Adults: Evidence from Massachusetts," NBER Working Paper 23668, August 2017

we modeled a six-month waiting period and found that it would have limited effectiveness, relative to the mandate.

Continuation of the section 9010 fee tax moratorium

As described in the previous section, the reinstatement of HIT would result in an increase in premiums of roughly 3 percent in 2018. Continuation of the moratorium would help reduce the significant premium increases and provide more stability to the individual ACA market.

As we describe below, if each of these market stabilization provisions were applied, they would increase enrollment by roughly 2 million individuals, reduce average premiums by more than 20 percent, and be roughly revenue-neutral, when considering federal outlays for CSR spending and APTCs.

Healthcare Reform Micro-Simulation Model results

We used our HRMM to simulate the impacts of the market stabilization proposals on enrollment, average premiums and federal spending. Table 5 shows the main assumptions employed in the baseline and market stabilization scenarios. In Appendix A, we discuss the HRMM methodology in detail.

Table 5 - Assumptions for Baseline and Market Stabilization Scenarios

| Item | Baseline | Market Stabilization |
|--|-----------------|------------------------------------|
| APTC and CSR funding and methodology under current ACA regulations | Yes | Yes |
| ACA Individual Mandate Full Enforcement | Yes | Yes |
| Transitional policies | Through 2018 | Through 2018 |
| Special enrollment enforcement, third party payment reform and actuarial value reduction | No | Yes, 2.75% to 4.00% premium impact |
| 9010 HIT Fees Collected | Yes | No, 3.00% premium impact |
| External Funding | No | Yes, \$15 billion per year |
| All other ACA regulations | Unchanged | Unchanged |

In Tables 6 through 8 we show the impacts of the market stabilizers described above on enrollment, market average premiums, and federal spending on APTCs, CSRs, external funding and 9010 HIT fee revenues. We did not include any other revenue impacts in Table 8; however, we show the impact of the moratorium on the 9010 HIT fee across the entire industry, not only the individual market, assuming a 7 percent increase in premiums subject to the tax for 2019 and 2020. We estimate that the market stabilization provisions we modeled would increase the ACA-compliant individual market enrollment by about 2.0 million enrollees. It would significantly reduce market wide average premiums and would be roughly budget neutral for the budget items we included.

One overarching assumption we have made in producing these projections is that the federal government will support the market and the law. For example, we are assuming adequate outreach and marketing efforts during open enrollment in 2018 and beyond, the presence of Navigators to help low-income insureds enroll, a well-functioning web portal, etc. If these things are not present, it is likely premiums will be higher than we have projected, and enrollment and federal spending will be lower than we have projected, and the differences between what we have projected and actual results could be substantial.

**Table 6 - Projected Enrollment in the Individual Market
in Millions**

| Baseline Scenario: Current Law | | | |
|---------------------------------------|-------------|-------------|-------------|
| | 2018 | 2019 | 2020 |
| ACA Compliant | 16.9 | 17.8 | 17.9 |
| Market Stabilization Scenario | | | |
| | 2018 | 2019 | 2020 |
| ACA Compliant | 19.0 | 20.0 | 19.9 |
| Change | | | |
| | 2018 | 2019 | 2020 |
| In Total | 2.0 | 2.1 | 2.0 |
| In Percentage | 12% | 12% | 11% |

Source: Oliver Wyman Healthcare Reform Micro-simulation Model as of Nov 2016

Due to rounding amounts may not sum.

Table 7 - Projected Market Average Premium PMPM (pre subsidies) in the Individual Market

| Baseline Scenario: Current Law | | | |
|---------------------------------------|-------------|-------------|-------------|
| | 2018 | 2019 | 2020 |
| ACA Compliant | \$486 | \$515 | \$551 |
| Market Stabilization Scenario | | | |
| | 2018 | 2019 | 2020 |
| ACA Compliant | \$384 | \$406 | \$438 |
| Change | | | |
| | 2018 | 2019 | 2020 |
| In Total | -\$103 | -\$110 | -\$113 |
| In Percentage | -21% | -21% | -21% |

Source: Oliver Wyman Healthcare Reform Micro-simulation Model as of Nov 2016

Due to rounding amounts may not sum.

**Table 8 - Projected Federal Spending
in Billions**

| Baseline Scenario: Current Law | | | |
|---------------------------------------|-------------|-------------|-------------|
| | 2018 | 2019 | 2020 |
| APTC | \$61 | \$66 | \$72 |
| CSR | \$10 | \$11 | \$12 |
| External Funding | \$0 | \$0 | \$0 |
| Total | \$71 | \$77 | \$84 |
| 9010 HIT Revenue* | -\$14 | -\$15 | -\$16 |
| Market Stabilization Scenario | | | |
| | 2018 | 2019 | 2020 |
| APTC | \$44 | \$48 | \$53 |
| CSR | \$10 | \$11 | \$12 |
| External Funding | \$15 | \$15 | \$15 |
| Total | \$69 | \$73 | \$79 |
| 9010 HIT Revenue* | \$0 | \$0 | \$0 |
| Change in Total | | | |
| | 2018 | 2019 | 2020 |
| APTC | -\$17 | -\$19 | -\$19 |
| CSR | \$0 | \$0 | \$0 |
| External Funding | \$15 | \$15 | \$15 |
| Total | -\$2 | -\$4 | -\$4 |
| 9010 HIT Revenue* | \$14 | \$15 | \$16 |
| Change in Percentage | | | |
| | 2018 | 2019 | 2020 |
| APTC | -28% | -28% | -27% |
| CSR | 0% | 0% | 0% |
| External Funding | N/A | N/A | N/A |
| Total | -3% | -5% | -5% |
| 9010 HIT Revenue* | -100% | -100% | -100% |

Source: Oliver Wyman Healthcare Reform Micro-simulation Model as of Nov 2016

Due to rounding amounts may not sum.

* HIT tax revenue across entire industry, not only individual market, assuming 7% increase in 2019 and 2020.

4

Appendix A

Oliver Wyman Healthcare Reform Micro-simulation Model

The Oliver Wyman Healthcare Reform Micro-simulation Model (HRMM) was used to assess potential premiums and enrollment in the individual health insurance markets under the two scenarios. This model is a leading edge tool for analyzing the impact of various healthcare reforms or proposed legislation. Economic modeling that captures the flow of individuals across various markets based on their economic purchasing decisions is integrated with actuarial modeling designed to assess the impact various reforms are anticipated to have on the health insurance markets. It is this rare integration of economic and actuarial modeling that allows us to capture the complex migration likely to occur as a result of various market reforms.

The HRMM has three primary modules. The first module characterizes the current population; the second module calibrates the simulated population to the current market; and the third module projects the simulated population in future years given coverage options, choice, and market reforms.

Characterization of the current population

In the first module, the population module, the current population was built from several data sources. Data from the 2015 American Community Survey (ACS) was selected as the primary data source and serves as the population basis. The ACS includes information for each respondent's age, gender, income, insurance coverage type, employment status, geographic place of work, geographic place of residence, industry in which he/she is employed, and many other characteristics. The ACS requests information on households, however our model is built on decisions made at the health insurance unit (HIU) level. An HIU is defined as any grouping of family members where each person within the HIU might be eligible for coverage under the same policy. Therefore, when preparing the ACS data for our model, it is adjusted to reflect HIUs.

While there are various sources of data that could be used as a primary data source, we chose to rely on the ACS data for several reasons. First, there is a documented bias in most survey data where Medicaid enrollment is substantially lower than administrative counts. National analysis of this "Medicaid undercount" indicates that many individuals enrolled in Medicaid report their status as either privately insured or uninsured,¹⁶ and the ACS applies logical edits to the data to adjust for this. Second, the ACS questionnaire includes the question, "Is this person CURRENTLY covered by any...health insurance or health coverage plans?"¹⁷ In contrast, the Current Population Survey (CPS) conducted by the Census Bureau assesses insured status over an entire year. The presentation of the question by ACS is more consistent with the HRMM since it examines the population at a single point in time. Third, enrollees are legally obligated to respond to the ACS,¹⁸ so

¹⁶ <http://www.shadac.org/publications/snacc-phase-v-report>

¹⁷ <https://www2.census.gov/programs-surveys/acs/methodology/questionnaires/2015/quest15.pdf>

¹⁸ <http://www.census.gov/programs-surveys/acs/about/why-was-i-selected.html>

the response rate is quite high (i.e., 96 percent in 2015).¹⁹ Finally, the ACS includes measures that permit the calculation of standard errors from the sample.

The ACS data is supplemented and synthesized with several other data sources in order to approximate the current marketplace. Information from the Medical Expenditure Panel Survey (MEPS) is used to create the current employer market. Individuals identified as working for private employers are randomly categorized into employer group size segment (e.g., small employer groups) based on the distribution of group size using the MEPS data. Information from the insurer/employer component of MEPS is used to determine which employed individuals will be offered insurance coverage. The results from the 2015 MEPS insurer/employer component data were used to establish the distribution of groups by group size (i.e., small employers and large employers) and the rates at which coverage was offered by state at various group sizes. Membership reports from CMS are used to size the current Medicaid and Medicare populations.

Definition of Insurance Coverage Types

Individual Market

Major medical health insurance coverage purchased by HIUs from health insurers, whether purchased directly from health insurers, through an agent or broker, or via the federal Exchange. This purchasing option is evaluated for all individuals, with the exception of those eligible for Medicare, Medicaid, Military and other government sponsored coverage. Individuals enrolled in transitional and grandfathered plans will be allowed to maintain such coverage as allowed by federal regulations.

Small Employer

Major medical health insurance coverage purchased by Small Group employers (i.e., employers with 2 to 50 employees) from health insurers, whether purchased directly from health insurers, through an agent or broker, or through the federal SHOP. This purchasing option is evaluated for an HIU if the primary or spouse is currently employed (i.e., under the age of 65) according to the employment information on the ACS record. The employer must be identified as offering health insurance coverage to employees in order for the HIU to evaluate employer-based coverage.

Large Employer

Major medical health insurance coverage either purchased by Large Group employers (i.e., employers with more than 50 employees) from health insurers, whether directly or through an agent or broker, or administered by a third party administrator (TPA). This purchasing option is evaluated for an HIU if the primary or spouse is currently employed (i.e., under the age of 65) according to the employment information on the ACS record; however, the employer must be identified as offering health insurance coverage to employees in order for the HIU to evaluate employer-based coverage.

Medicare

All individuals age 65 and older are assumed to be eligible for and enrolled in Medicare. Individuals eligible for Medicare are assumed to remain eligible for Medicare, and no other purchasing options are evaluated for them.

¹⁹ <https://www.census.gov/acs/www/methodology/sample-size-and-data-quality/response-rates/>

Medicaid/CHIP

This purchasing option is evaluated if the requirements for Medicaid eligibility are met based on family income reported on the ACS record. This option is not evaluated for those receiving Military coverage as indicated on their ACS record, regardless of income.

It is important to note that not all individuals eligible for Medicaid or CHIP choose to enroll in such coverage. There are many possible reasons why an individual may choose not to enroll in Medicaid. A Government Accountability Office study found that many do not enroll because of the perceived stigma associated with filing for public assistance.²⁰ Others may choose not to enroll because they do not need access to medical services.

Other Government Coverage

Other government coverage includes individuals who are enrolled in TRICARE and other military coverage types. HIUs are identified as being eligible for military coverage types based on the ACS data.

Uninsured

Residents who are not covered by any of the health insurance coverage types described above or have coverage that does not comply with the federal minimum essential coverage requirement are considered uninsured.

Health status and expected health expenditures

Health status is strategically assigned to various sub-populations based on a statistical analysis of self-reported health status obtained from the CPS. The CPS provides the starting assumptions for the population morbidity because the data includes a self-reported health status indicator as well as fields classifying income, age, gender, coverage type and other categories. Respondents to the survey classify their health into one of five categories: excellent, very good, good, fair, and poor. It is important to note that the CPS data lacks credibility for select cohorts by age and gender on a state level. As a result, the HRMM uses nationwide CPS data as the basis for assigning health status to state enrollees.

The model reflects the CPS classifications numerically by assigning a morbidity load to each category. The morbidity load is applied to expected health expenditure calculated based on state, age and gender specific allowable claims from MarketScan database.²¹ The estimated amounts reflect the expected health expenditure for each person in each modeled HIU.

Synthetic insurers

The HRMM assumes there will be one insurer in each of the individual, small group and large group health insurance markets. Information obtained from rate filings, the Supplemental Health Care Exhibits, and the Office of the Assistant Secretary for Planning and Evaluation (ASPE) were used to determine premium levels in the market and to assess the adequacy of the premium levels from 2015 through 2017.

For the individual market, the HRMM assumes the synthetic insurer offers silver metallic-level plans and one transitional/grandfathered plan. For metallic-level plans, the HRMM allows individual market enrollees to select the lowest cost silver plans available on the Individual Exchange.

²⁰ <http://archive.gao.gov/t2pbat4/150626.pdf>

²¹ <http://truvenhealth.com/markets/life-sciences/products/data-tools/marketscan-databases>

Premiums for other metal level plans have not been included in the HRMM. Premiums for the transitional/grandfathered plan are assumed to represent average benefit levels and are based on premiums obtained through rate filings. Additionally, premiums for the transitional/grandfathered plan are assumed to comply with the rating rules of non-ACA plans (e.g., full underwriting, etc.). Individuals modeled to take up individual health insurance coverage are randomly assigned to metallic or transitional/grandfathered coverage, with the distribution of enrollees consistent with the distribution of individual market enrollees observed in 2015 in aggregate and by income range and age group.

For the group health insurance market, the HRMM assumes the synthetic insurer offers one silver metallic-level plan and one transitional/grandfathered plan for small employer-based coverage. The silver metallic-level plan is based on the lowest-cost silver plan available in the Small Business Health Options Program (SHOP). Premiums for the transitional/grandfathered plan are assumed to represent average benefit levels and are based on premiums obtained through rate filings. Additionally, premiums for the transitional/grandfathered plan are assumed to comply with the rating rules of non-ACA plans (e.g., rating bands, etc.). Individuals working for small employers offering health insurance coverage are randomly assigned metallic or transitional/grandfathered coverage, with the distribution of enrollees consistent with the distribution of small group market enrollees by product type (e.g. metallic level) observed in 2015. For large employer-based coverage, the synthetic insurer is assumed to offer one plan that reflects market average benefit and premium levels. It is important to note that premium levels for a given employer-based group will be reflective of the modeled demographic and risk mix, using the demographic information from the ACS data and the assigned health status factors.

Premium levels for 2018 and beyond have been developed using a target loss ratio approach, and assumes the synthetic insurer will price to the following target loss ratios by market:

| Health Insurance Market | Traditional Loss Ratio |
|--------------------------------|-------------------------------|
| Individual | 80% |
| Small Employer | 80% |
| Large Employer | 85% |

The traditional loss ratios for the Individual health insurance market have been adjusted in 2015 and 2016 to account for the impact of the temporary federal transitional reinsurance and risk corridor programs.

Calibration of the HRMM

Once the current market landscape is known, the market migration module of the HRMM is calibrated to reflect the current market landscape. The calibrated market migration module projects the market into which HIUs will enroll, based on the options and corresponding premiums available to them.

The purpose of the calibration is to solve for the model parameters that replicate the characteristics (e.g., size, premium, claims cost, etc.) of the known insurance markets during the base period. This step is critical to ensure that the appropriate utility functions are utilized in the market migration module. While a utility function can model people’s desire for consumption of healthcare services, as well as their aversion to financial risk, it cannot predict certain behaviors, such as why people eligible to enroll in Medicaid do not enroll, or why individuals with sufficient financial means to purchase health insurance chose to be uninsured. It is because of these behaviors that the model calibration is important and necessary.

To perform this calibration, all of the information resulting from the simulation module is considered except the known market in which the individual was enrolled in 2015. Individuals with coverage through Medicare, military coverage and coverage through local, state or Federal government employers were excluded from the calibration, as individuals with these types of coverage are assumed to continue with those coverages throughout the projection. Individuals with Medicaid were also excluded because a majority of individuals with this coverage are also assumed to continue to be covered by Medicaid.

For each of the remaining HIUs, the various coverage options available to them in 2015 are examined and the utility associated with each option is calculated. If the primary and the spouse have access to employer-based coverage, the utility curves assume the HIU would select the lowest-cost premium option. The cost of individual health insurance coverage is calculated for each HIU, including HIUs that have access to employer-based coverage. HIUs with household incomes greater than the Medicaid income requirements are not allowed to evaluate the option of enrolling in Medicaid. Once an HIU has evaluated all premium options, the lowest premium is chosen, and the economic utility is calculated for that coverage and compared to the economic utility of being uninsured. The option with the greatest utility is selected and the HIU is assumed to enroll in that health insurance option.

The results were examined to ensure the appropriate number of people is simulated to have each type of current coverage (e.g., individual, small group, etc.). If the projected enrollment results did not replicate the known 2015 distribution, the various parameters in the utility function were revised until the projected enrollment was consistent with the known enrollment at several key sub-population levels. This step is critical to the modeling as without such calibration the reliability of the results is diminished significantly. The model is calibrated to ensure the known market is replicated at several levels, such as by broad age and income ranges within various markets.

Projection of future populations

Once the model is calibrated, the model is ready to be used to project the markets into which individuals will enroll based on the coverage options available to them, and the resulting premiums for those markets. The process of determining which coverage option each HIU elects to enroll in is based on the application of economic utility maximization. Employer's coverage evaluation is performed for each year which premium data is known (i.e., 2015, 2016 and 2017). The employer's coverage decisions from 2017 are then assumed to continue in the future; however, the model will determine whether each HIU with employer-based coverage continues to meet the affordability requirement. The response from employers and individuals to changes in premiums and other financial incentives is a critical element of the model.

The model incorporates the various aspects of the ACA and other economic assumptions that will impact premiums and enrollment. These items include but are not limited to:

- Premium and cost sharing subsidies available to low income individuals
- Individual coverage mandate and penalties for not taking coverage (unless exempt)
- Medicaid eligibility rules by state
- Application of an affordability test to determine whether individuals offered employer coverage are eligible for subsidized coverage in the Individual Exchange
- Changes in FPL in future years
- Medical inflation
- Consumer Price Index for All Urban Consumers (CPI-U) growth consistent with the National Health Expenditure Data (NHED)

STABILIZING THE NON-GROUP MARKET

- Wage inflation is assumed to be consistent with CPI-U growth
- Income tax rates specific to the state including state, federal, FICA, and Medicare taxes
- Differences in utilization between individuals with insurance and similarly situated individuals without insurance
- Transitional health benefit plans are assumed to terminate at the end of 2018

The resulting simulated population is input into the calibrated market migration module, and the purchasing decisions for each HIU are modeled each year from 2015 through 2020. Individuals currently enrolled in Medicaid or Medicare, those having coverage through the military and those receiving coverage as a result of being an employee or a dependent of an employee that works for a local government entity or the state or Federal government are assumed to retain that coverage.

Incomes are assumed to increase with annual changes in the CPI-U, consistent with the statutory formula for projecting changes in FPL levels in Alaska, Hawaii and remaining states. Based on the income, family size and composition of each HIU, income as a percentage of FPL is calculated for each projection year. These FPL percentages are then used for:

- Determining whether the HIU is eligible for Medicaid or children within the HIU are eligible for CHIP
- Determining whether the HIU is eligible for premium subsidies within the Individual Exchange
- Determining whether the HIU is eligible for cost sharing subsidies within the Individual Exchange
- Determining whether the HIU is eligible for exemption from the individual mandate penalty if they elect not to enroll in coverage
- Determining whether the employer-sponsored coverage made available to the HIU is deemed “unaffordable” and as a result the HIU is eligible to enroll in the Individual Exchange and receive premium and potentially cost sharing subsidies

The market migration module evaluates several different options in which the HIU is eligible to enroll. The model calculates the utility for each one of these options. HIUs are only allowed to evaluate employer-sponsored coverage if they are currently enrolled in this market as the model does not assume new offerings of employer-sponsored coverage.

The potential options that are evaluated for each HIU (where eligible) include:

- All individuals in the HIU enroll in employer-sponsored coverage made available by the employer for the year modeled
 - Small employer groups offering transitional or grandfathered coverage will evaluate whether to switch to ACA compliant coverage based on the employer economic utility function, with the employee evaluating the selected premium amounts (net of employer contributions); please note, transitional plans are assumed to terminate at the end of 2018
- All individuals in the HIU enroll in coverage within the Individual Exchange and receive premium subsidies and cost sharing subsidies, where applicable; the metal level purchased in the Individual Exchange will be based on the economic utility associated with the lowest-cost silver plans and if eligible CSR – variant plans
- All individuals in the HIU enroll in ACA compliant coverage with no subsidies; the metal level purchased will be based on the economic utility associated with the lowest silver plans
- All individuals enrolled in transitional or grandfathered plans enroll maintain their current coverage; please note, transitional plans are assumed to terminate at the end of 2018

- All individuals in the HIU elect to remain uninsured

The HRMM assumes a steady state population. This means the distribution of the overall population by income, gender, health status, occupation, family size and other variables is assumed to remain relatively constant over the projection period. The steady state population assumptions can be summarized as follows:

- The distribution of the population by income level (i.e. as a percent of FPL) in aggregate remains unchanged. Incomes are modeled to increase each year based on salary inflation assumptions which are consistent with the change in CPI-U
- Significant migration of individuals of a specific age or gender into or out of each state is not assumed to occur
- The distribution of the overall population by health status, occupation, and family size are assumed to remain relatively constant through 2020, with the exception of the impact aging of the population will have. The steady state assumption does not mean the health status of specific individuals will remain unchanged over time, only that the overall relative health status by specific subsets of the population (e.g., by FPL and age) do not change. However, as described below, we expect that people will move between various modes of insurance (e.g., small group, individual and uninsured) and that this migration will result in changes to the average morbidity of those markets. Similarly, the family composition of a given household may change; however, it is assumed that the overall distribution of the state's population by family composition does not change

The overall rate of employment over the period between 2018 through 2020 is assumed to be consistent with 2017 employment levels.

HIU utility

HIUs are assumed to make insurance purchasing decisions by evaluating the various options above and making an economically rational decision to select the option that maximizes the utility for the HIU. The utilities for all members of the HIU are aggregated to develop the corresponding utility for the HIU under that option. The HRMM assumes the decision to take up coverage is based on the utility of the HIU and does not allow individual members within an HIU to enroll in different markets, with one exception. Individuals eligible for Medicaid and Medicare are assumed to enroll in such coverage and have been removed from the decision-making process for each HIU.

In order to model this behavior, a utility function and the associated parameters were selected. As previously described, the utility function and parameters selected were those that replicated the status quo upon application of the market migration module to the simulated population. The underlying utility functions utilized are as follows:

$$U1_{i,j} = -E(OOP_{i,j}) - premium_{i,j} - r * VAR(OOP_{i,j}) + u * (H_{i,j})$$

$$U2_{i,j} = -w * E(HEP_{i,j}) - Penalty_i - w * r * VAR(HEP_{i,j}) + \frac{1}{2} * u * (H_{i,j})$$

In the equations above, U1 represents the utility of having health insurance and U2 represents the utility of being uninsured. If U1 is greater than U2, the HIU selects coverage option j. If U1 is smaller than U2, the HIU selects being uninsured. $OOP_{i,j}$ is the out-of-pocket health care expenditures for HIU i under purchasing option j, HEP_i represents the expected health care expenditures to be

incurred if the HIU elects to be uninsured, r is the risk aversion coefficient, u is the perceived value of having access to health insurance and $(H_{i,j})$ is the perceived value associated with consuming health services.

In calibrating the model, we elected to vary the parameters r and u at seven different ranges of incomes to reflect the fact that individuals with higher incomes are more risk averse and have different perceptions of accessing health care services. We also varied the parameters for six different age ranges to reflect the fact that individuals with similar incomes may behave differently at different ages. For example, an early retiree with greater accumulated assets drawing income from a lifetime of investments may be more risk averse than a young individual with a similar income but more limited assets.

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Appendix B

Figure 1 – Description of methodology

| Calculation Steps | Amount | Comment |
|---|--------------|--|
| 1) 2013 Benefit and Non-Benefit Cost PMPM | \$253 | From 2013 MLR reports; sum of gross incurred claims, taxes, fees and administrative expenses |
| 2) Trended to 2015 | 1.12 | Based on Large Group Fully Insured trend from MLR reports |
| 3) 2015 Benefit and Non-Benefit Cost (pre-ACA) PMPM | \$284 | Calculated amount |
| 4) Network Discounts | -\$31 | Estimated to be roughly 7% of the 2015 ACA benefit and non-benefit cost. |
| 5) Mental Health, Habilitative, Pediatric Dental and Vision Benefits PMPM | \$5 | OW estimate |
| 6) Increased Actuarial Value PMPM | \$46 | CMS 2015 RA Summary shows average AV of 0.696 for ACA plans, pre-ACA average estimated at 0.60 AV from "More Than Half Of Individual Health Plans Offer Coverage That Falls Short Of What Can Be Sold Through Exchanges As Of 2014" - Health Affairs May 2012. |
| 7) ACA Expenses, Taxes and Fees PMPM | \$15 | Difference between 2015 ACA to 2013 pre-ACA trended non-benefit expenses |
| 8) Geography Mix PMPM | \$6 | Difference between 2013 individual premium based on 2015 state mix to 2013 average premium |
| 9) Ratable Demographics 3:1 PMPM | \$50 | Change in average 3:1 rating factors; pre-ACA average age distribution estimated based on AHIP's "Individual Health Insurance 2009" report; 2015 ACA average age distribution estimated from ASPE's "Health Insurance Marketplace 2015 Open Enrollment" March 2016 |
| 10) Non-Ratable Demographics PMPM | \$12 | Remaining change in 5:1 rating factor distribution |
| 11) Morbidity PMPM | \$50 | Remaining component - calculated amount |
| 12) 2015 Benefit and Non-Benefit Cost (ACA) PMPM | \$436 | From 2015 MLR reports; sum of gross incurred claims, taxes, fees and administrative expenses |



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