

## Actuarial Memorandum

**TO:** California Department of Insurance  
**FROM:** Trace Bechter, Henry Han, Jerry He, Tianxiang Yuan  
**SUBJECT:** BruinCare Insurance Rating Methodology and Assumptions

---

### INTRODUCTION AND ASSUMPTIONS

Our objective is to use 2015 and 2016 base data from the BruinCare insurance company to price individual health insurance premiums in three different regions for various age groups in the year 2018. We assigned our region names as follows: Region 1 is Grizzly, Region 2 is Gold, and Region 3 is Poppy. In 2018, Grizzly and Gold increased their population by 2 percent and 3 percent respectively from 2016, whereas Poppy decreased their population by 5 percent. However, in the Poppy region, U.S. Care, a competitor with 35 percent of the market share, partially shifts out of Poppy, causing some of their members to move to BruinCare.

#### Assumptions:

- U.S. Care's market share in the Poppy region dropped from 35 to 30 percent
- Using the weighted average of BruinCare's market share compared with the total market share (excluding U.S. Care), we found that the 5 percent of the members left without a provider would give BruinCare a 0.28 percent increase in market share
- The increase in market share followed by the decrease in population causes BruinCare's membership to increase by 2.3 percent in this region
- All claims were based on Medicare
- Lapse rate could not be calculated because it was impossible to determine why members left
- Age and gender distributions in 2018 would stay similar to 2016 levels

### PRELIMINARY DATA ANALYSIS

A large part of our projections hinge on the age and gender distribution being the same in 2018 as in 2016. We noticed that the age and gender distributions were virtually identical between 2015 and 2016, despite the fact that 25% of the members were unique to each year. Thus, we concluded that it is reasonable to assume that the distribution would remain the same in 2018. Calculating base premium per member per month (PMPM) for the age and gender breakdowns, we arrive at PMPMs of \$234.10 for males aged 0-19, \$357.43 for females aged 0-19, \$295.34 for males aged 20-34, \$471.89 for females aged 20-34, \$357.17 for males aged 35-49, \$364.39 for females aged 35-49, \$337.28 for males aged 50 and up, and \$294.29 for females aged 50 and up. The total base PMPM is \$348.66.

## ADJUSTMENTS AND TRENDS

There are four adjustments and trends that we need to look at: area factors, calibrations, annual claims trends, and risk transfer adjustments. We calculated the area factors by first finding the PMPM for all three regions, then dividing those three values by the total PMPM. The tobacco calibration is 1 because it is illegal to rate premiums on tobacco usage. The area calibration is calculated by taking the inverse of the weighted average of the area factors, which also results in 1. The age calibration is calculated by taking the inverse of the weighted age curve that was given to us within the data, arriving at a value of 0.644. The total annual trends for Utilizations per 1000 Members and Unit Cost are 0.74% and 6.15% respectively. These numbers were obtained by comparing fitted numbers in June.

To solve for the risk transfer rate, we first projected risk scores for the company and the state in 2018, arriving at scores of 1.061 for the company and 1.230 for the state. Using these numbers, we found the projected relative risk in 2018 to be 0.863, a step down from 2016's 0.883. We increase the base 10% adjustment given to us by the factor the relative risk drops, arriving to the final adjustment of 10.23%.

## FINAL PREMIUMS

After applying the 2018 Provider Network Unit Cost Adjustment to the Total Projected PMPM of \$549.86, we arrive at the Regional PMPM of \$458.73 for Grizzly, \$706.12 for Gold, and \$466.87 for Poppy.

To get the final Total Premium, we start out with the Base Claims PMPM of 549.86. After applying the Utilization Trend and Unit Cost Trend, we get an Experienced Allowed Cost of \$628.77. Next, we apply the Risk Transfer Rate of 10.23% to get the HIX Claims Allowed Base PMPM of \$693.09. After multiplying this number by the Paid to Allowed Factor, we get a HIX Paid Claims PMPM of \$485.17. Finally, we add \$87.80 of Administrative Expenses to get a Total Premium of \$572.97.

Applying the calibrations, the total calibrated premium is \$368.81. Now we apply the area factors calculated earlier to get the regional premiums for people age 21 of \$307.69 in Grizzly, \$473.62 in Gold and \$313.15 in Poppy.

	Age 0-19	Age 30	Age 40	Age 50	Age 60	Age 64+
Grizzly	\$195.38	\$349.23	\$393.23	\$549.53	\$835.07	\$923.07
Gold	\$300.75	\$537.56	\$605.29	\$845.89	\$1285.42	\$1420.87
Poppy	\$198.85	\$355.42	\$400.20	\$559.28	\$849.88	\$939.44