



# SELF-FUNDED HEALTH CARE PLANS

## IMPROVING THE ODDS OF YOUR FUNDING STRATEGY

Written by  
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Recently, several of our clients have asked for help in funding their plans. Usually this is because they have had a “bad year”<sup>1</sup> and ended up short, having to dip into reserves or if there are not sufficient reserves, having to take from their general funds.

Sometimes, there is a single person with a lot of claims. For example, I heard about a “black swan” event, a premature infant who stayed in the NICU for over a year and whose hospital charges exceeded \$10 million dollars. At other times, it is just a lot of above-average claim totals for several people.

Now with COVID-19 affecting the population, we see that there is a non-zero chance that a broad portion of the US population will be impacted by the pandemic. This has the potential to affect the claims experience of self-funded health care plans.

Nobody likes to get caught short at the end of a year. We will consider funding strategies involving both the reserve and the monthly funding budget that will increase the odds of having a “good year”, accomplishing the funding goals set at the beginning of the year. Of course, the more money is budgeted to cover plan costs, the better the odds.



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This article examines the question: "How much should be funded in order to lower the risk of having a shortfall to an acceptable level?"

This will give the plan sponsor some options so they can choose a level of risk that is tolerable to them. We will look at one example that will serve to illustrate many real-life situations and apply statistical techniques to increase the odds of a good year.

## AN EXAMPLE: THE ABC COMPANY

Let's say you are a plan sponsor of The ABC Company's self-funded health care plan covering Medical and Rx benefits for 75 employee lives, mostly white-collar office workers. Fixed costs, because they involve no risk, are handled separately from the claims, so I will ignore them in this discussion.

In the past, your CFO has been budgeting for claims based on the previous year's claims adjusted for trend, amendments and so on. As part of the budgeting process, say in November each year, the CFO asks your actuary to calculate a traditional (IBNR) claim reserve<sup>2</sup>.

So, at the beginning of the year you have the reserve amount set aside as an asset in your general funds. You also have your monthly budget amount equal to 100% of expected claims. Each month you either have a surplus or a deficit depending on whether the actual claims are less than the budgeted amount or greater than the budgeted amount.

If it is a surplus, you can add this to the reserve to use in future months (or use it for other purposes).

If there is a deficit, you can withdraw that amount from the reserve (or from general funds).

At the end of the year, there is a 50/50 chance that the cumulative deficit/surpluses from the 12 individual months will be positive or negative.

If it is positive, no problem; it is like getting an income tax refund.

If it is negative, it is like doing your personal taxes and finding that you owe the government money that you have not budgeted for. Not good. Not a "good year". You want to budget enough money to fund the actual claims during the year and to keep the reserve at its current level, 100% of the Traditional Reserve.

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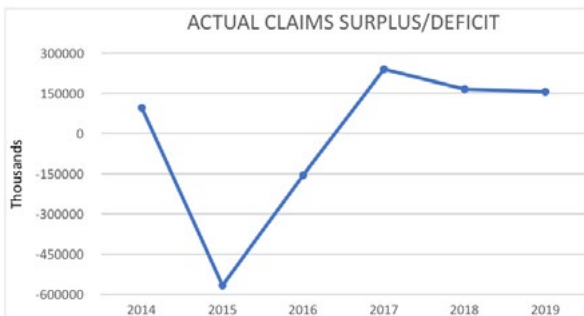
What can the you do to increase the odds of having a good year?

The first step in improving your odds is to know what the odds are. This is the kind of thing that actuaries are trained to do.

## ACTUARIAL ANALYSIS

As an actuary, I recently calculated the odds for a group similar to The ABC Company. My results are described below, modified slightly for this example.

I looked at 6 years of actual claims history for the company and compared these to the amounts budgeted for each year. The Surplus/Deficits are shown in the chart below on a PEPM (per employee per month) basis.



It is obvious that the plan has experienced large unexpected fluctuations which is more typical for smaller employee groups like this. We will look more closely at other reasons for the fluctuations below.

## 2015 A CATASTROPHIC YEAR<sup>3</sup>

2015 was the first full year of a new Reference Based Pricing (RBP)<sup>4</sup> plan. Expectations for very low claims were based on other Reference Based Pricing plans (which had dramatic savings), and the immature experience from the first year (2014).

The plan design was very generous (\$500 out-of-pocket) and there were 3 claimants that maxed out their specific

deductible (\$45,000). The average PEPM claims were high because (1) the generous nature of the plan and (2) the awareness of the employee population that health care was now very affordable for them, which increased utilization.

## 2016-2017 CHANGES WERE MADE

This was the beginning of a transition to a more stable claims trend. This was due to some plan changes: now there was a \$1500 deductible and a \$6550 out-of-pocket with a 20% patient copay. Also, there was more resistance to RBP from the provider community.

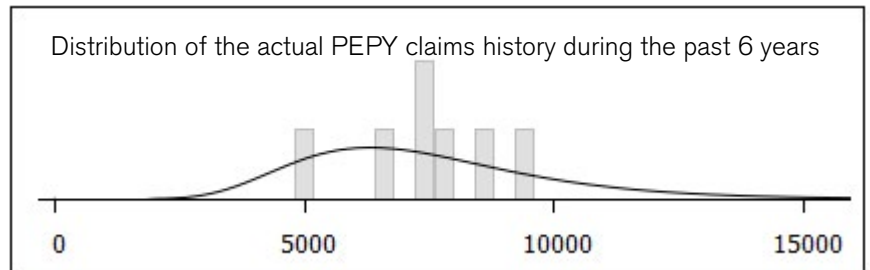
This led to an awareness of the employee population that health care was now not as generous and they were likely to run into headaches dealing with the providers who were balance-billing. Note that 2016 was a transition year between the 2015 “catastrophe” and the 2017 stability.

## 2018-2020 STABILITY ACHIEVED

A period of high turnover and decreasing employee count leads to fewer people participating in the plan since there are more employees who have not yet met the “service waiting period” requirement. Plus, the new people are not as familiar with navigating their new plan; Reference Based Pricing may be a totally new concept to them.

## RESULTS OF THE ACTUARIAL ANALYSIS

To be on the safe side, I decided to base my calculations on the full 6 years, including the chaotic beginning of the plan.



ACTUAL PEPM		
Net Annual History Claims		
YEAR	MONTHLY	ANNUAL
2019	\$424	\$5,088
2018	\$498	\$5,975
2017	\$473	\$5,682
2016	\$696	\$8,358
2015	\$857	\$10,284
2014	\$357	\$4,281

SUMMARY STATISTICS		
YEAR	MONTHLY	ANNUAL
Mean	\$551	\$6,611
Standard Deviation	\$188	\$2,261
Coefficient of Variation	0.34	0.34

The main results of my analysis are shown in the tables above

Annual claims for groups this size are known to have a normal distribution. This is the familiar “bell-shaped curve”. The Coefficient of Variation<sup>5</sup> value, .34, is important because this reflects the variability of the underlying experience. This value is above average compared to other plan experiences that I have seen.

When I trended the older years for medical inflation, I came up with an adjusted annual PEPM mean of \$7,440 (\$620 per month). I then used 34% of this for the Standard Deviation, which equals \$2,530.

These results above allowed me to determine the levels of risk involved in different funding options. I used probability and statistics to arrive at my conclusions. If you are interested in the computations, a separate article entitled “Improving the Odds Technical Details” is available from the author.

## ODDS OF HAVING A GOOD YEAR

Funding 100% of the funding factor<sup>6</sup> provides a 52% chance of ending up with a good year. The expected surplus/deficit is zero.

A 10% increase in the funding factor would only increase the chances of a good year to 63%. The expected surplus/deficit is \$55,800.

Note there are other funding options as shown in the table below:

% of Ex-pected Claims	Beginning of Year						End of Year	
	Reserve	As % of Annual Claims	Monthly Budget Amount	Annual Budget Amount	Odds of Good Year	Expected Surplus (deficit)	Reserve	As % of Annual Claims
90%	\$78,120	14%	\$41,850	\$502,200	40%	(\$55,800)	\$22,320	4%
100%	\$78,120	14%	\$46,500	\$558,000	52%	\$0	\$78,120	14%
110%	\$78,120	14%	\$51,150	\$613,800	63%	\$55,800	\$133,920	24%
120%	\$78,120	14%	\$55,800	\$669,600	73%	\$111,600	\$189,720	34%

## TWO FUNDING STRATEGIES TO INCREASE THE ODDS

Instead of simply budgeting 100% of expected claims, here are two changes the company could make to improve their odds from 52% to 73%.

Strategy 1 - Fund 120% of expected claims

This extra margin for safety means that about three-fourths of the time the claims budget will not have a shortfall.

Strategy 2 – Build up the reserve to 24% of annual claims and 110% funding

If the company had room to budget 110% of expected claims, then if, as expected, the company ends up with a 10% surplus of \$55,800 at the end of the year, this can be added to the reserve account, so the reserve will be at 24% of the annual claims at the end of the year.

Then the next year, they could continue funding at the 110% level and increase the higher probability of a good year to 74%, *assuming that the Company is willing to use the Margin for Safety to pay any claims in excess of the 110% budget.* So even if it is a “bad year” for claims, the extra margin in the reserve will increase the odds of having a good year overall.

## NOTE

It is not always true that the company can keep adding the surplus to the actual reserve held. I never recommend holding a reserve that is more than 35% of Annual Claims, and usually not more than twice the Traditional IBNR reserve.

## SUMMARY

We have seen how we can use simple probability theory to measure the odds of different funding/reserve options. The plan sponsor then has the option to increase the odds of a good plan experience in the upcoming year.

We used an example of a group with an unstable history and the increase in odds can be described as “moderate”. For a larger and more stable group, it is much easier to increase the odds.

For example, for a large stable group, a 10% increase in the claims budget could immediately increase the odds to 75%. And a 20% increase could increase the odds to over 99%. A visual example of this is provided in the article “Improving the Odds Technical Details”. ■



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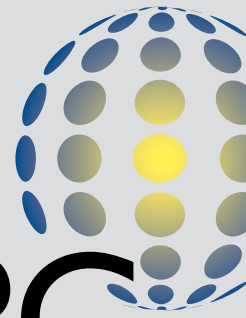
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Philip has been an Actuary since 1976. He was a coworker, apprentice, and long-time friend of Carl Harker. Carl has been well-known as the author of *Self-Funding of Health Care Benefits*, and was a regular contributor to this magazine. Philip took over the responsibilities of running Self-Funding Actuarial Services, Inc. in 2015. Philip is now the co-owner of the company with his wife Cindy Castevens. He continues to work alongside Amy Sanders, Cathy Nmetsov, and Nicole Zier. They strive to maintain the integrity of the business, and to uphold the values Carl instilled in them. Philip and Cindy live in Winston-Salem with their sons Noah and Sam. Philip is publishing a biography of Carl Harker to be released in 2020.

#### References

- 1 Bad Year: any year with a claim experience that does not fall within the company's funding goals
- 2 Traditional "IBNR" Reserve: the standard IBNR based on a lag table, using the "triangle method" to extrapolate future lag claims based on the past history
- 3 Catastrophic Year: an informal term in this article. I would categorize 2015, which had claims more than twice what was expected, as a "catastrophic" year, and 2016, which had claims 25% above expected, as a "bad" year
- 4 Reference Based Pricing (RBP): a plan design that involved limited plan payments to a percentage of the amount that Medicare would pay for the same services, usually between 110% and 160%
- 5 Coefficient of Variation: a statistical term referring to the ratio of the standard deviation divided by the mean
- 6 Funding Factor: another name for PEPM; refers to the average claims experience for a group for an entire year, prorated down per employee per month



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