



SOCIETY OF ACTUARIES

Article from:

Actuary of the Future

Nov. 2012 – Issue 33

Weakness in an Actuarial Process and Ideas for Improvement

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WHAT IS AN ACTUARIAL PROCESS?

A process is a series of steps we take to achieve a goal. When you want to make a new dish, you may go find a recipe. It tells you what ingredients you need, the amount you need and how you will cook them precisely.

An actuarial process is the recipe actuaries follow. Like a chef, we need some ingredients to start with, and for us it is usually data. Our fridge would be a centralized place that stores the data, such as database systems or shared drives. We prepare our ingredients by using tools, be they spreadsheet, database software or actuarial software which helps us manipulate the data. Then, we use the tools that we select to perform the calculations—our cooking step! Lastly, we summarize and present the results and our analysis to someone who will use them to make decisions.

WEAKNESS IN AN ACTUARIAL PROCESS

You will follow a recipe carefully when you make a dish, as you know that a little variation may drastically change

the quality of the product. Similarly, in a much more complicated valuation project, a small error can also create a huge difference in the calculation of reserves.

Although many of us are comfortable with the way we work now, we may be unaware of, or neglect, risks that exist in our actuarial processes.

When actuaries tackle a task, the focus is often on the second-to-last step: producing results directly. However, there may not be enough time spent on the design and controls in the process as a whole, which can leave the process exposed to risks.

Things can go wrong right from the start. We may not get the correct data from the administration system,

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causing us to waste precious time producing results with the wrong data. Even if the data we receive is correct, it could change after we import the raw data into actuarial software.

In our attempt to get the data into the right format before it is used in calculations, we might ruin the original dataset.

When one person is scripting in actuarial software to manipulate the data, the person may have tests to detect if the code can achieve what it intends to do, but there may be no reviews on the code itself. It may not be the simplest for what it does and could have taken much less time. He may also have to quickly move on to a new project without giving sufficient time to document his work. If that person leaves the company, his or her successor may struggle to understand it.

On the other hand, even when multiple members work on coding, if one member makes a change to the code, the change may take effect before anyone has a chance to review it because there is no explicit control to prevent anyone from modifying the code and there is no easy way for others to discover the change.

WHAT ARE THE POTENTIAL IMPROVEMENTS?

The items I've been discussing are just a small sample of the risks pertinent to our actuarial processes. Some of these risks may look minor and could be easily mitigated with simple but effective controls. However, with others we may need to spend more time on design and use different resources to help us.

In fact, if we look to other professionals, such as the IT department, we will be able to see a gap between an actuarial process and an IT process. More emphasis is placed on design and controls on the process for a software developer than for an actuary. For example, peer review for the code is a formal step in the process of a software developer. There may also be a platform that requires changes to be reviewed before being pushed into the

main system. Last but not least, there is more focus as a team on achieving a consistent style of coding.

Although the difference may be justified by the fact that the final products these two professionals deliver are different and that actuaries may not be able to fully implement the IT risk controls due to inherent restrictions in our systems, there are a few things that we can learn from the software developers to improve the quality of our own actuarial process.

The first two steps would be to review the current actuarial process and identify the weaknesses. With increased awareness and support from management, a formal best practice guideline can be created. This might include measures that could be implemented with current resources, such as standards to encourage consistent style in coding and spreadsheets, or allotting sufficient time for review. The guideline could also include other controls that may require more effort to implement, such as the control of changes made by each team member or a log that lists changes implemented into the model. If resources are available, research into more powerful tools and new platforms can be considered.

These are just a few ideas for improvements we can make to our actuarial process to make it more robust. It will certainly be worthwhile to analyze our processes more deeply and seek insights from other professions to further strengthen them. ☆