



Article from
Small Talk
September 2020



Doing Illustration Actuary Testing Over the Life of a Policy

By Mark Rowley

Editor's note: This is the first in a series of three articles to be published in Small Talk. The second article will go into more detail on setting assumptions and assumption governance in illustration actuary testing, and the third article will discuss model governance and handling challenging situations faced by illustration actuaries.

To do illustration actuary testing, actuaries should be familiar with several essential publications:

- The Life Insurance Illustration Model Regulation (Model #582)
- ASOP No. 2—Nonguaranteed Charges or Benefits for Life Insurance Policies and Annuity Contracts
- ASOP No. 12—Risk Classification
- ASOP No. 15—Dividends for Individual Participating Life Insurance, Annuities, and Disability Insurance
- ASOP No. 23—Data Quality
- ASOP No. 24—Compliance with the NAIC Life Insurance Illustration Model Regulation
- ASOP No. 41—Actuarial Communication
- ASOP No. 56—Modeling (effective October 2020)
- Life Insurance Illustrations: Application of the NAIC Life Insurance Illustrations Model Regulation and Actuarial Standard of Practice No. 24 (a practice note)

Some of the fundamental concepts in illustration actuary work are scales, experience and testing.



SCALES

Scales relate to nonguaranteed elements. According to ASOP 24, section 2.8, a nonguaranteed element is

any element within an insurance policy that affects policy costs or values that is not guaranteed or not determined at issue. A nonguaranteed element may provide a more favorable value to the policyholder than that guaranteed at the time of issue of the policy. Examples of nonguaranteed elements include policy dividends, excess interest credits, mortality charges, expense charges, indeterminate premiums, and participation rates and maximum rates of return for indexed life insurance products.

Nonguaranteed elements almost always impact the fund or cash values that are built up in a policy. The nonguaranteed element that may have been around in the industry for the longest is policyholder dividends. In my early days in the industry, I worked on setting dividend scales. Universal life products' nonguaranteed elements include cost of insurance charges, interest crediting rates and expense charges. I call these the "UL NGEs."

A scale for any particular product is the set of all the nonguaranteed elements that apply.

When doing illustration actuary testing it is important to understand the three different scales discussed in ASOP 24:

- **Illustrated scale.** The set of nonguaranteed elements being illustrated. For a universal life product, these are the UL

NGEs that underly the projection of fund values and cash values in new sales and in-force illustrations.

- **Currently payable scale.** The set of nonguaranteed elements currently being applied as policies are processed. For a universal life product, these are the UL NGEs that underly how fund values and cash values are computed as policies are administered.
- **Disciplined current scale (DCS).** The set of nonguaranteed elements based on actual recent experience. For a universal life product, these are the UL NGEs that allow the self-support and lapse-support tests to be passed (see the testing section later in this article).

It is easiest to do illustration actuary testing if all three scales are the same.

EXPERIENCE

To do the self-support and lapse-support tests, assumptions need to be set for key items like mortality, expense, investment income, termination and taxes. These assumptions need to be set using solid assumption governance, which I will cover in the second article of this series.

Section 3.4 of ASOP 24 is titled “Developing the Disciplined Current Scale (DCS).” The two ASOP subsections give guidance as to assumption setting.

The first subsection (Section 3.4.1) talks about how the first choice in setting assumptions is to use actual experience. If there isn’t suitable data, assumptions should be derived in a reasonable and appropriate manner from actual experience of other similar classes of business. Assumptions may not include projected trends of improvement for *any* assumption beyond the effective date of the illustrated scale.

In Section 3.4.1 there is guidance on how to set the following assumptions:

- investment return,
- mortality,
- persistency,
- direct sales expenses,
- all other expenses, and
- taxes.

In particular, there are options for setting “all other expenses,” one of them being the Generally Recognized Expense Table (GRET).

The second subsection (Section 3.4.2) talks about reflecting changes in experience and how assumptions need to be updated once there is a change in the experience that has been significant and ongoing.



TESTING

Testing is where the assumptions and the scales (specifically the DCS) come together. It requires a projection model that is managed with solid model governance. More details on model governance will be covered in the third article in this series.

The model that needs to be created will do a simple asset share calculation (cash in less cash out). When doing testing for a new policy form, the items included in the calculation are premiums and investment earnings (cash in) and benefits, such as death benefits, surrenders and dividends; expenses, to include commission, acquisition and maintenance; and taxes (cash out) (Figure 1).

Figure 1
Asset Share Calculations: Cash In Less Cash Out

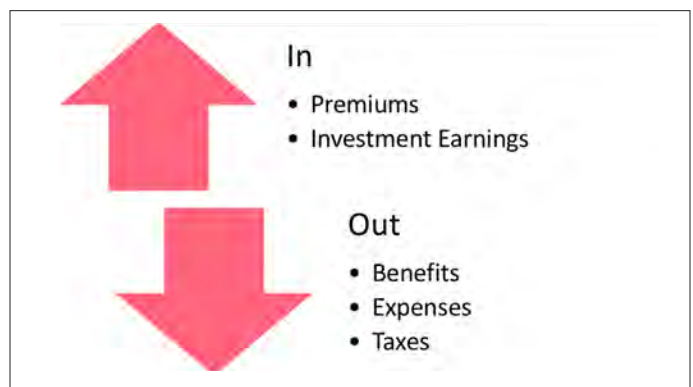


Table 1 shows what the results of the model in the first two years could be.

Table 1
Example Results From Projection Model

Year	Premium	Benefits	Commissions	Other Expenses	Investment Earnings	Taxes	Cash Flow	Accumulated Cash Flow
1	\$2,840	82	2,414	2,106	(95)	(577)	(1,280)	(1,280)
2	\$2,725	111	136	47	69	(315)	2,815	1,535

This results in a cash flow for each year, which is combined with earlier cash flows to create an accumulated cash flow for each year. The projection extends out for the life of all the policies issued in the policy form. In the example in Table 1, the accumulated cash flow in year 2 (\$1,535) is the sum of the year 1 and year 2 cash flows (-1280 + 2815).

The self-support test requires that at every point in time starting with the 15th policy anniversary (20th policy anniversary for second-or-later-to-die policies), the accumulation of all policy cash flows is greater than the illustrated policyholder value, that is, the cash surrender values and any other illustrated benefit amounts available at the policyholder’s election.

The lapse-support test is the same except that the lapse assumption is set at zero for durations 6 and more.

TESTING REQUIRED OVER THE LIFE OF A POLICY

Most of what I have thought about related to illustration actuary work is what is required when a product is first being priced. I focused on the idea that the product isn’t completely priced until it has passed the self-support and lapse-support tests. However, it is also true that illustration actuaries should be able to follow any policy that has been issued and perform self-support and lapse-support tests throughout the life of the policy. I say “policy”; what is actually being tested is the policy form, not individual policies.

In ASOP 24, Section 3.7 says the illustration actuary doesn’t have to retest if:

- a. the currently payable scale has not been changed since the last certification and the illustration actuary determines that experience since the last certification does not warrant changes in the disciplined current scale that would make it significantly less favorable to the policyholder; or
- b. the currently payable scale has been changed since the development of the disciplined current scale most recently certified only to the extent that changes are reasonably consistent with changes in experience assumptions underlying the disciplined current scale; or
- c. the currently payable scale has been made less favorable to the policyholder since the last certification and the change is more than the change in the current experience would dictate.

However, this doesn’t mean that the illustration actuary doesn’t need to have the ability to test if needed. Over time, a policy form can have circumstances change, such as a drop in interest rates, that lead to a situation where it no longer passes the tests. I will talk more about how to deal with difficult situations in the third article of this series. Section 3.7 of the ASOP is only designed to save the illustration actuary time if they are sure the tests would pass if performed. ■



Mark Rowley, FSA, MAAA, is vice president, managing actuary at EMC National Life Company. He can be reached at mrowley@emcnl.com.