

Dear Actuary:



My pension plan is scheduled to complete an experience study in the next year. What is the purpose of an experience study and what benefits does it provide the plan?

– Inexperienced in Inglewood

Dear Inexperienced:

My compliments on continuing to develop a more complete understanding of your pension plan! With financial management being a top priority of retirement plan boards, an experience study can be a vital tool for successful financial plan management.

When actuaries talk about “experience,” what we’re referring to is what has happened over the past several years to the plan’s membership and the plan’s assets, and how well the actuarial assumptions predicted what happened. “Experience” covers things like turnover and retirement patterns, pay increases, how long the retirees live, and how well the investments performed. An experience study is completed periodically to review the plan’s actual experience and compare it to the actuarial assumptions. If one of the actuarial assumptions didn’t match up very well with the plan’s actual experience, then the experience study can be used to modify the assumption so that it will hopefully match up better with the plan’s experience going forward. The actuarial assumptions are used to calculate the plan’s liability, funded status, and actuarially determined contributions, so getting the assumptions right is really important. The Government Finance Officers Association recommends that an experience study be performed at least once every five years.

Experience studies are used to study two classes of actuarial assumptions. **Demographic** assumptions estimate the future behavior of a plan’s specific member group, such as rates of retirement, mortality, turnover, and disability. **Economic** assumptions are generally related to the overall economy and include the investment return, inflation, salary increases, and payroll growth.

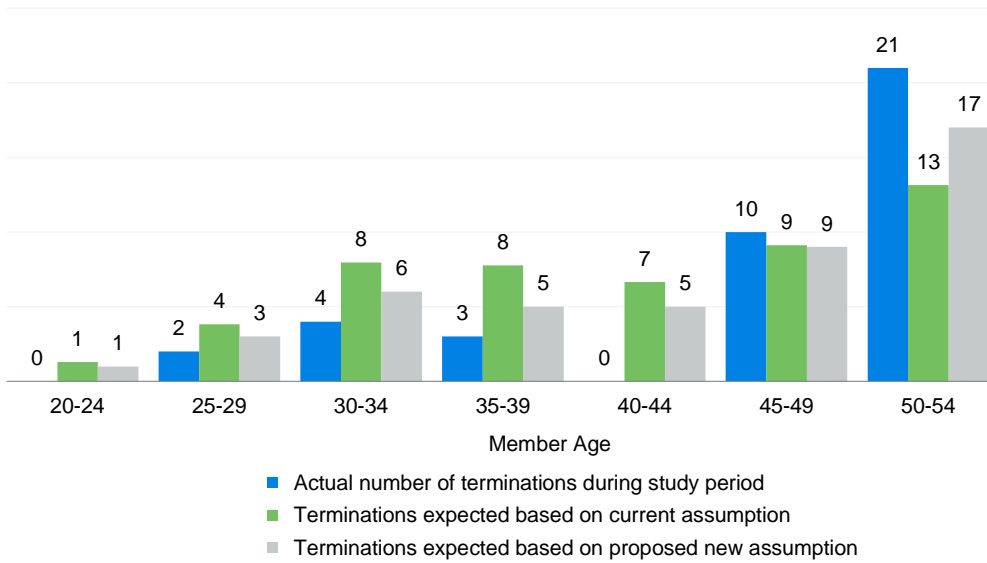
Periodic experience studies are valuable because the plan’s experience can change over time. Changes in the plan’s benefit provisions, member values and lifestyles, and economic forces can all lead to shifts in the plan’s experience. If the actuarial assumptions aren’t changed to reflect those shifts, the results of actuarial valuations might understate or overstate the plan’s true financial condition.

All stakeholders of a government entity rely on the results of actuarial valuations, including the taxpayers. Therefore, the actuarial assumptions should be the best estimate of what might happen in the future. Understated costs might result in the plan’s inability to pay benefits or cause sharp increases in required future contributions. Overstated costs might result in pressures to reduce benefits or place an inequitable burden on the current generation of taxpayers, members, and employers.

Figure 1 is an example of how an experience study examines a particular demographic assumption—in this case, turnover experience for a five-year period. The chart displays the actual amount of turnover this plan experienced, as well as the amount of turnover that was expected based on the current assumption. In addition, the chart illustrates a proposed new turnover assumption. This experience study concluded that the current assumption (in green) didn’t match the plan’s experience (in blue) very well: the current assumption was too high at younger ages and too low at older ages. It’s important when creating a new assumption (in orange) to reflect a combination of the plan’s recent experience and experience over a longer period of time, as well as the plan sponsor’s expectations for the future. For example, turnover patterns often reflect what’s going on in the broader economy: In times of financial stress, people tend to hold onto their jobs and turnover declines, whereas in good times people are more likely to risk making a job switch. It wouldn’t be reasonable to assume that the economic conditions during the experience study period will last indefinitely. Therefore, the results of the experience study need to be tempered with some consideration of how economic conditions might change in the future.

Experience studies should also kick the tires on the structure of each actuarial assumption. In this example, the current assumption took into account the age of members but not their years of service, gender, or job classification. Sometimes these factors play a bigger part in turnover patterns than age does. For this particular experience study, the actuary took a look at these other factors but concluded that member age best followed the actual plan experience.

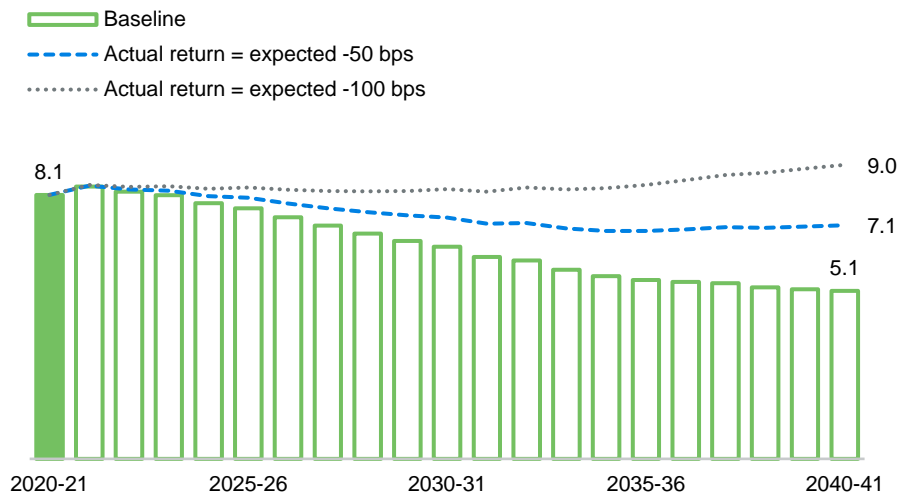
FIGURE 1: EXPERIENCE STUDY REVIEW: TURNOVER EXPERIENCE 2014-2019



Gender and service did not relate as clearly to turnover patterns for this group as age did.

I mentioned before that an experience study covers both demographic and economic assumptions. Now let's look at one of the key economic assumptions, the investment return assumption, and explore the impact of using an assumption that's too high. Figure 2 shows what happens to the actuarially determined contribution if the plan's assets consistently underperform relative to the assumption.

FIGURE 2: INVESTMENT RISK



As you can see, over time, the actuarially determined contribution can be significantly higher if the actual investment return is always 100 basis points lower than the assumption. This can create tremendous issues for the plan as well as for future generations of plan members and taxpayers.

Generally, an actuary will keep an eye on a plan's experience as part of the valuation process (this is known as actuarial gain/loss analysis). However, this analysis only checks up on experience between valuations, which isn't a timeframe that is long enough to easily identify trends. The purpose of an experience study is to review the plan's experience over multiple years, with the goal of spotting the trends and crafting any changes to the assumptions that would better anticipate future experience. An experience study is also a great time to open up communication with your

actuary to discuss the plan's experience from your point of view. While numbers can tell a story, they don't always tell the full story. So providing your actuary with additional information will help them fine-tune the plan's actuarial assumptions.

Because economic circumstances and the framework of the plan change over time, a single set of assumptions will not be suitable indefinitely. Completing experience studies is an important way to give all parties involved with the plan the information they need to ensure successful long-term financial management of the plan.

Your Milliman Actuary

P.S. Thanks so much to Jack Chmielewski, FSA, for providing the information I need to understand why experience studies are so valuable for successful financial plan management!



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For more information about defined benefit pension plans, see prior letters [here](#).

Do you have a question about your defined benefit pension plan? Write to us at dear.actuary@milliman.com.