

7.1.0 Overview

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Dealing with a Changing Environment

For each of the reserving techniques we discussed in the previous sections, we not only explained the general approach, but also discussed how the technique responds to different types of changes. In their 1977 paper titled "*Loss Reserve Adequacy Testing: A Comprehensive, Systematic Approach*," James Berquist and Richard Sherman proposed solutions for analyzing claims data in a changing environment. Their findings remains relevant to actuaries today.

Berquist and Sherman suggested two methods for handling changes:

1. Treat changes using data selection and rearrangement
2. Treat changes using data adjustment

Data Selection and Rearrangement

If possible, an actuary should endeavor to use data that remains relatively unaffected by changes in the insurer's environment. For example, if settlement rates were changing, one should consider using reported data instead of paid data when estimating unpaid claims.

Berquist and Sherman list four other examples:

1. Use earned exposures instead of claim counts when the definition of a claim count is changing.
2. Use policy year data instead of accident year data when policy limits or deductibles have undergone changes.
3. Use report year data instead of accident year data if there has been a shift that makes claim severity more closely correlated with report year rather than accident date.
4. Use accident quarters rather than accident years when exposure growth causes shifts in the average accident date within each period.

In addition, it can be valuable to divide data into more homogenous groups. For example, risks could be grouped by coverage, class, territory, risk size, or any other distinguishing characteristic. However, one should exercise caution to avoid subdividing data into groups that are too small, as this can compromise the credibility of the group.

Data Adjustment

In practice, addressing changes solely through data selection may not always be feasible. In such cases, the data in question can be adjusted to account for distortions caused by certain types of change. In particular, Berquist and Sherman outline two techniques for data adjustment: one adjusts paid data to account for changes in claims settlement rate, and the other adjusts reported data to account for changes in case reserve adequacy.

After the data has been adjusted, it is typical to estimate the unpaid/ultimate claims using the development method.