BROWN—Chapter 4, Review

In what four ways does the reserving actuary perform an important role in the insurance process?	1. The actuary protects the rights of the insurer's policyholders by saying that the insurer has set aside enough money to pay all future benefits on the obligations that already exist. 2. The actuary confirms that reported profits are real and they can be distributed or reinvested. 3. The actuary's certification of liabilities provides some evidence to potential shareholders or buyers interested in acquiring the company about the level of solvency and the adequacy of stated liabilities. 4. The actuary provides important underlying data for the ratemaking actuary to use in setting appropriate rates for the future.
What are two of the primary sources of uncertainty regarding unpaid claims?	1. That estimated payments to be made on claims change over time until the claims are finally settled. 2. That there are claims, especially early on, that have happened but have not yet been reported to the insurer.
What information is contained in the claim file?	Date of accident, coverages affected, date the claim was reported, assigned lawyers and physicians, payments made to-date.
The claims adjuster is expected to estimate and update regularly what the reserve should be on a claim. What information will the adjuster take into account in order to decide upon the reserve?	1. The severity of the loss. 2. The likely time until settlement. 3. Inflation between now and the expected time of settlement. 4. Recent changes in either claim settlement or payment patterns, including relevant changes in statutory or case law. 5. Any other pertinent information.
"Gross IBNR" is typically comprised of what four elements?	1. A provision for future development on known claims. 2. A provision for potential reopening of claims. 3. A provision for claims incurred but not reported (pure IBNR). 4. A provision for claims reported but not recorded (RBNR).
What is a bulk reserve?	A reserve for gross IBNR.
Define "paid age-to-age loss development."	The change in payments made on a defined set of claims between successive points in time.
Define "age-to-ultimate loss development."	The change in payments from one specified point in time to the ultimate payment amount.
Define "paid loss development factor," f_j.	Cumulative Payments at Duration j / Cumulative Payments at Duration (j-1).
Define "incurred losses."	With respect to loss development, incurred losses are usually defined as losses paid to-date plus outstanding reserve estimates.

What are two reasons that loss development factors may be less than 1.0?

Salvage received reduces the amount the insurer ultimately pays. Subrogation also reduces the amount the insurer ultimately pays.

What is a fast-track average reserve?

For high-frequency, low-severity, fast-closing lines of business, claim adjusters often use this type of reserve. It is an average value, based on a study of past experience. If a claim remains open long enough, the claim adjuster will replace the fast-track reserve with an individual case reserve estimate.

To do a thorough and professional job of loss reserving, what internal information about the company must the actuary know?

Information about the company's potential changes in mix of business, its product pricing, its claim administration procedures, and its overall management goals and attitudes.

What types of external information must the actuary know?

The rate of inflation, changes in statutory and case law, etc.

What types of information about the data must the actuary know?

How the claims are counted, and whether the data collection techniques and categories are acceptable (especially with regard to homogeneity and credibility). Also, whether the data are consistent, which involves checking any anomalies to make sure they are understood.

Loss Reserve Methods

What is the "case reserves plus" method?

Historically, for insurers not using actuaries, the loss reserve liability was often set arbitrarily by adding to the case reserve some percentage that approximated gross IBNR.

What is the "Expected Loss Ratio" method?

The individual responsible for setting the loss reserve will calculate (or estimate) an expected ultimate loss ratio for the business. This loss ratio, multiplied by the earned premium, produces the estimated ultimate losses. The loss reserves are then calculated as

Ultimate Losses - Losses Paid-to-Date.

$E[\text{Loss Ratio}_{i,j}]$ = the estimated (selected) Expected Loss Ratio for line of business i and policy period j.

$\text{Expected Ultimate Losses}_{i,j}$
$= E[\text{Loss Ratio}_{i,j}] \times \text{Earned Premium}_{i,j}$.

$\text{Estimated Loss Reserve}_{i,j}$
$= \text{Expected Ultimate Losses}_{i,j} - \text{Losses Paid-to-Date}_{i,j}$

Estimated Total Loss Reserve
$= \sum_{i,j} \text{Estimated Loss Reserve}_{i,j}$

What are potential problems with this method?	Management conceivably could manipulate the selected Expected Loss Ratio. In any case, the method is very sensitive to the estimation/selection of the Expected Loss Ratio.
What is the "Link Ratio/Chain Ladder" or "Loss Development Triangle" method?	This is the basic method in which loss development factors are estimated. It is similar to what was discussed in chapter 3. You should review Tables 4.1, 4.2, and 4.3, and know how all of the numbers in those tables are calculated.
Is this method used with paid losses or incurred losses?	It can be used with either paid or incurred (where "incurred" is defined as "paid plus case reserves"). One method is "paid loss development," the other is "incurred loss development."
Which should be higher, the estimated ultimate losses from paid loss development, or from incurred loss development?	In theory, they should be the same. They are attempting to measure the same thing.
What advantage does paid loss development have over incurred loss development?	Paid loss data are completely objective, representing actual payments with no subjective reserve estimates.
What advantage does incurred loss development have over paid loss development?	Incurred loss development data include additional information—i.e., that contained in the reserve estimates. Paid loss data may be slower to react to changes, since payments are made slower than claims are reported.
What are the three steps of the chain ladder method that result in loss reserve estimates?	1. Select age-to-age column factors. 2. Use these selected factors to create estimates of the lower half of the loss development triangle, as shown in Table 4.4. 3. Calculate the gross IBNR reserve requirement. This is equal to the expected ultimate payments less payments to-date.
What are two disadvantages of the loss development method?	This method requires that several parameters be estimated. Statistically speaking, this does not necessarily create a stable model. Also, this method is highly sensitive to the operational activities of the insurance company. If the payment/reserving patterns have changed without being detected by the actuary, highly inaccurate estimates may result.