Claims Data

LEARNING OBJECTIVES	KNOWLEDGE STATEMENTS
A.4. Describe, analyze, or design the information requirements for ratemaking related to loss and loss adjustment expense and demonstrate the use of loss and loss adjustment expenses in ratemaking. *Range of weight: 8-12 percent*	**a. Organization of the data: calendar year, policy year, accident year, report year** **e. Reported losses versus paid losses** **f. Claim counts** **g. Loss adjustment expense (allocated and unallocated expenses)**
B.1. Describe, analyze, and validate the information requirements for estimating unpaid claims. *Range of weight: 2-6 percent*	**a. Types of data and their sources** **d. Organization of data: calendar year, accident year, policy year, underwriting year, report year**
B.3. Construct and appraise unpaid claims estimates using each of the following estimation techniques: • Development technique, including case outstanding technique • Expected claim technique • Bornhuetter-Ferguson technique • Cape Cod technique • Frequency-Severity techniques *Range of weight: 12-16 percent*	**h. Key terms: case outstanding, paid claims, reported claims, incurred but not reported, ultimate claims, claims related expenses, reported and closed claim counts, claim counts closed with no payment, insurance recoverables, exposures, experience period, maturity or age, and components of unpaid claim estimates**

This section will focus on data that is captured from the claims process.

Losses and Loss Adjustment Expenses

The costs related to handling claims fall into 2 major categories:

1. **Losses:** The amounts paid or payable to claimants for claims on insurance policies. Losses can also be referred to as indemnity or claims (redundantly).
2. **Loss Adjustment Expenses (LAE):** The costs for an insurer in handling claims.

One way that Loss Adjustment Expenses can be further divided into 2 categories is:

1. **Allocated Loss Adjustment Expenses (ALAE):** Loss Adjustment Expenses that can be directly attributed to a specific claim. An example might be the cost of hiring an independent adjuster to handle a specific claim.
2. **Unallocated Loss Adjustment Expenses (ULAE):** Loss Adjustment Expenses that cannot be directly attributed to a specific claim. An example would be the salary of internal claims adjusters.

Another way that LAE can be subdivided is into:

1. **Defense and Cost Containment (DCC):** This includes any costs related to legal defense of claims and claim cost containment.
2. **Adjusting and Other (AO):** This includes any LAE costs not included in DCC, of which the biggest component is likely to be claims adjuster salaries.

Types of Transactions

The types of transactions you might see in a claims database include:

- A new claim being opened
- An initial loss case reserve being established
- An initial ALAE case reserve being established
- A loss or ALAE case reserve being changed
- A loss payment being made
- An ALAE payment being made
- Subrogation being recovered
- A claim being closed
- A claim being re-opened

Depending on the insurer's database, some of these transactions might be combined together onto a single data record. Common combinations include a claim being opened and an initial case reserve being established, a payment being made and a case reserve being changed, and a payment or a case reserve change and the claim being closed.

Claims Data Elements

The following data elements are generally of most interest to actuaries when using claims data:

- **Policy identifier:** Same as in the policy database. Used to uniquely identify a particular policy.
- **Risk identifier:** Same as in the policy database. Used to uniquely identify a risk on a policy.
- **Claim identifier:** This is a unique number or set of characters that identifies a particular claim.
- **Claimant identifier:** This is a unique number or set of characters that identifies a particular claimant on a particular claim.
- **Event identifier:** This is a unique number or set of characters that identifies a unique event (e.g., a catastrophe).
- **Accident date:** The accident date for the claim.
- **Report date:** The report date for the claim.
- **Transaction date:** The date on which the transaction (e.g., a loss payment) was made.
- **Claim status:** This will indicate whether the claim is open or closed, and possibly re-opened/re-closed.
- **Paid Loss:** This is the amount of loss being paid with this transaction.
- **Case reserve:** Depending on the insurer's database, this is either the new case reserve after this transaction, or this is the change in the case reserve as a result of this transaction.
- **Paid ALAE:** This is the amount of ALAE being paid with this transaction.
- **ALAE Case Reserve:** Same as case reserve but for ALAE instead of Loss.
- **Coverage:** This field indicates to which coverage the transaction relates (e.g., BI, PD, Collision).
- **Cause of Loss:** The peril that caused the claim (e.g., a car accident, a fire).
- **Recovery related fields:** Subrogation, Salvage, Deductible Recovery, and possibly Reinsurance if it can be tracked at the claim level.
- **Other Claim Characteristics:** Any other information about the claim that may be of interest to the actuary, such as type of injury.

Measuring and Aggregating Losses

Similar to premiums and exposures, statistics for losses and ALAE for individual claims or groups of claims can be aggregated over time using one of the following methods:

- **Calendar year (CY):** This considers all transactions with transaction dates during the year. Calendar year metrics are fixed once the year is over.
- **Accident year (AY):** This considers all transactions as of a given valuation date on claims with an accident date during the year.
- **Report year (RY):** This considers all transactions as of a given valuation date on claims with a report date during the year.
- **Policy year (PY):** This considers all transactions as of a given valuation date on claims coming from policies with a policy effective date during the year.

Two common statistics that are aggregated for claims are:

- **Paid Losses:** This is just a summation of the paid loss amounts across transactions and claims.
- **Reported Losses:** This is equal to the sum of paid losses and the change in case reserves during the time period. Note that the starting case reserve amounts are always 0 at the start of an accident year, report year, or policy year, in which case reported loss simplifies to paid loss + ending case reserve. Reported losses are also known as **case incurred losses**.

Loss data is sometimes expressed net of some recoveries. For example, the data may be net of salvage and subrogation, but gross of reinsurance. You should take care to clarify what ”net” means when you see net loss measures.

Claim Counts

Claim counts can also be aggregated over time. Common statistics for claim counts include:

- **Reported claim counts:** The number of claims with a report date in a time period.
- **Open claim counts:** The number of claims that are open as of a given date.
- **Closed claim counts:** The number of claims that are closed as of a given date.
- **Closed with pay claim counts:** The number of claims that are closed as of a given date that have had loss payments.
- **Closed without pay claim counts:** The number of claims that are closed as of a given date that have not had loss payments.

Note that a complication arises when counting closed claims on claims that have been re-opened and re-closed, possibly multiple times. Claims can also close without pay, only to be re-opened and closed with pay. Different insurers may address this issue differently.

As an example, suppose a claim is reported and opened on 7/1/2012, closed on 7/1/2013, re-opened on 10/1/2013, and then finally closed again on 3/1/2014. If you are counting closed claims on a calendar year basis, you may count this same claim twice; once in CY 2013, and once in CY 2014. Some insurers might address this by either avoiding counting claims on a CY basis, by re-stating the history to only count the first or latest time the claim was closed, or by treating re-opened claims as new claims.

Example Data and Measures

Suppose we have the following transactions from the claims database:

Claim Number	Accident Date	Report Date	Policy Effective Date	Transaction Date	Claim Status	Paid Loss	Ending Case Reserve
1	11/1/2009	11/19/2009	7/1/2009	11/19/2009	Open	$0	$10,000
1	11/1/2009	11/19/2009	7/1/2009	2/10/2010	Open	$1,000	$9,000
1	11/1/2009	11/19/2009	7/1/2009	9/1/2010	Open	$7,000	$2,500
1	11/1/2009	11/19/2009	7/1/2009	1/15/2011	Closed	$3,000	$0
2	2/14/2010	2/14/2010	9/10/2009	2/14/2010	Open	$5,000	$10,000
2	2/14/2010	2/14/2010	9/10/2009	11/1/2010	Open	$8,000	$4,000
2	2/14/2010	2/14/2010	9/10/2009	3/1/2011	Closed	$1,000	$0

Claim 1 will be in accident year 2009, report year 2009, policy year 2009, and has transactions in calendar years 2009, 2010, and 2011. Claim 2 will be in accident year 2010, report year 2010, policy year 2009, and has transactions in calendar years 2010 and 2011.

Based on this data, some metrics we can calculate include:

- CY 2010 Paid Losses = $1,000 + $7,000 + $5,000 + $8,000 = $21,000
- CY 2010 Change in Case Reserves = ($2,500 - $10,000) + ($4,000 - $0) = -$3,500
- CY 2010 Reported Losses = $21,000 + (-$3,500) = $17,500
- AY 2009 Paid Losses as of 12/31/2010 = $1,000 + $7,000 = $8,000
- AY 2009 Reported Losses as of 12/31/2010 = $1,000 + $7,000 + $2,500 = $10,500
- AY 2009 Reported Losses as of 12/31/2011 = $1,000 + $7,000 + $3,000 + $0 = $11,000
- RY 2009 Reported Losses as of 12/31/2011 = $1,000 + $7,000 + $3,000 + $0 = $11,000
- PY 2009 Paid Losses as of 12/31/2010 = $1,000 + $7,000 + $5,000 + $8,000 = $21,000

A summary of reported losses using different time measures and valuation dates is below:

	Valuation Date		
	12/31/2009	12/31/2010	12/31/2011
Calendar Year 2009	$10,000	$10,000	$10,000
Accident Year 2009	$10,000	$10,500	$11,000
Report Year 2009	$10,000	$10,500	$11,000
Policy Year 2009	$10,000	$27,500	$25,000
Calendar Year 2010	n/a	$17,500	$17,500
Accident Year 2010	n/a	$17,000	$14,000
Report Year 2010	n/a	$17,000	$14,000
Policy Year 2010	n/a	$0	$0
Calendar Year 2011	n/a	n/a	-$2,500
Accident Year 2011	n/a	n/a	$0
Report Year 2011	n/a	n/a	$0
Policy Year 2011	n/a	n/a	$0

Problem Knowledge Checklist

1. Measuring and Aggregating Losses

   - Be able to define the calendar year, accident year, report year, and policy year concepts.
   - Be able to define paid losses and reported losses.
   - Be able to calculate paid losses and reported losses on a CY, AY, RY, or PY basis given a set of transactions.
   - Be able to calculate paid ALAE and reported ALAE on a CY, AY, RY, or PY basis given a set of transactions.
   - Be able to calculate paid and reported losses or ALAE for time periods of quarters and months instead of years.
   - Be able to calculate reported, open, closed, closed with pay, and closed without pay claim counts on a CY, AY, RY, or PY basis given a set of transactions.

