

## 6.2 Summary

 10m

### Steps of the Development Technique

#### 1. Compile Claims Data

Rows represent accident years, columns represent development years, and diagonals represent calendar years.

#### 2. Calculate Age-to-Age Factors

Divide each cell by the previous entry for that accident year.

#### 3. Calculate Averages

Calculate an average development factor for each maturity. Common choices are the arithmetic, geometric, medial, and volume-weighted averages.

#### 4. Select Claim Development Factors

Select an average development factor for each maturity. Consider the following when making your selection:

- Smooth progression of factors
- Stability
- Credibility of experience
- Changes in patterns
- Applicability of the historical experience
- Shock losses/CAT losses
- Actuarial judgement

#### 5. Select Tail Factor

Three approaches for evaluating a tail factor:

- Industry benchmark development factors
- Fit an exponential curve
- Utilizing reported-to-paid ratios at the latest observed paid development period

## 6. Calculate Cumulative Claim Development Factors

Multiply claims development factors to obtain cumulative development factors (CDFs) to ultimate.

## 7. Project Ultimate Claims

Multiply the most recent accident year observed losses by their corresponding CDFs to project ultimate losses.

## Key Assumptions

1. Claims recorded to date will continue to develop in a similar fashion in the future.
2. For accident years that are not fully developed, claims observed thus far give us relevant information on claims that have yet to be observed.
3. Throughout the policy period:
  - the mix of claim types is stable.
  - policy limits and deductibles (if any) are stable.
  - reinsurance retention limits (if any) are stable.
  - there is consistent claims processing (claim settlement rates and case outstanding adequacy).

## Uses for the Development Method

The development method works well:

1. when there is a large amount of credible historical claims data available.
2. for high-frequency, low-severity lines with stable and timely reporting of claims.
3. when the presence or absence of large claims does not greatly distort the data.

It is valid in other scenarios as well, as long as the key assumptions of the method are met.

## Analyzing the Development Method

Description	Impact on Development Method	
	Paid	Reported
<b>Increase in exposures</b>	If exposures distribution is stable year over year, claims increase but development factors are unaffected. If exposures distribution change, causing the average accident date to shift, claims projection may be distorted.	
<b>Increase in claim ratios</b>	Claims increase, but development factors are unaffected	
<b>Speedup in claim settlement rates</b>	Overestimates development factors and ultimate claims	No effect
<b>Increase in case outstanding adequacy</b>	No effect	Overestimates development factors and ultimate claims
<b>Change in product mix</b>	Development factors change to reflect the new mix	