

8.3 Count-based techniques

- overview: count-based techniques make several simplifying assumptions. In reality, processing 100 claims of \$100 will cost more in ULAЕ than one claim of \$10,000. In addition, sudden drops (or increases) in claim numbers or values are unlikely to lead to an immediate reduction (or increase) in overhead expenses or claims management personnel. Dollar-based techniques do not account for both of these issues.
- Count-based techniques, on the other hand, assume that the cost of each claims transaction is the same regardless of claim size, & also assume that a claim which is open longer will cost more. There are six different approaches that we will discuss:
- Brian technique
 - Weary-Johnson technique
 - Mengo-Alien claim starting technique
 - Roberdjo
 - Spalla
 - Generalized approach for claim counts
- the key difficulty in utilizing count-based methods is the access to reliable & consistent data regarding the number of claims.
- notes → with the exception to the generalized approach for claim counts, you are not required to know any formulas for these count-based techniques. They expect mostly qualitative questions on this topic.

→ Brian technique

- In Brian's approach, ULAЕ is categorized into five transaction types: initiating, managing, distributing, concluding, & responding claims. It projects future transaction volumes & assumes similar ULAЕ costs for the five transaction types based on historical ULAЕ-to-transaction volume ratios.
- In this method, the assumption of uniform ULAЕ costs across transaction types is a limitation. However, accurately predicting future transaction numbers & average costs presents a more substantial challenge. Gathering reliable & consistent data for these predictions, particularly for claim counts & transactions, often proves difficult.

→ Weary-Johnson technique

- Johnson follows a similar approach to Brian's technique, but instead focuses on two key transactions: reporting or maintenance. In essence, it's a method for evaluating & forecasting ULAЕ expenses using historical data & weighted calculations.
- Johnson's method offers an advantage in that it only requires actuaries to estimate the relative amount of resources needed for various transaction types. It eliminates the need for actuaries to engage in time & motion studies to determine the cost of each type of transaction.
- The Johnson technique works by averaging the ULAЕ cost for each claim activity; this estimation involves using historical data to compute weighted claim counts, with the relative transaction costs serving as the weighting criteria. These calculated weighted claim counts are then compared to the overall ULAЕ costs recorded during the same historical timeframe. Lastly, the expected unpaid ULAЕ is calculated by considering the number of weighted claim counts & their associated ULAЕ costs & claims that occurred before the recent valuation date or the end of each subsequent year.

→ Mengo-Alien claim starting

- the Mengo-Alien claim starting technique works by estimating the future staff count needed to handle claims & then by multiplying by the future ULAЕ per claim staff member. This amount is summed up over CYs to get the future unpaid ULAЕ.
- More specifically, this technique requires the projection of several components. One component is the amount of future calendar year open, closed, & pending claims (OCP claims). The next is the workload per staff member, which is the ratio of OCP claims per staff member. Finally, we can estimate our future staff required; we can multiply that number by a projected CY ULAЕ per staff member to get an estimate of the unpaid ULAЕ. We repeat this for several calendar years to get our total unpaid ULAЕ estimate.

- In addition to OCP counts being count-based, Mengo & Alien use OCP counts to say that it serves as an adequate proxy to claims department processing as well as it being observable from usual reserve data.

→ Roberdjo

- Tony Roberdjo introduces a specialized pricing method for claims-handling services, particularly aimed at third-party claims administrators (TPAs). In today's risk financing landscape, where self-insurance & large deductible plans are common, many organizations outsource their risk management to TPAs. Roberdjo's approach provides valuable insight for such organizations, helping them forecast future expenses related to TPA's claim handling, specifically the ULAЕ.

- Furthermore, Roberdjo explains the connection between claim duration & ULAЕ expenses. Roberdjo emphasizes the differing levels of effort required to handle claims in their initial 30 days versus those open for five years. She underscores the importance of claim duration, pointing out that as it prolongs, the cost of managing the claims over its remaining lifespan also increases.

→ Spalla

- Tatjana Spalla suggests modernizing the assessment of claims-related activity costs by abandoning manual line-item breakdown studies, thanks to computer-supported processes in all claim departments. She advocates utilizing advanced claims information systems to track employees' time on individual claims, categorized by employee levels.

- This approach involves consolidating activities into broader transactional categories to compute average costs, adjusted for overhead & other expenses. These averages fit seamlessly into the analytical frameworks like those by Roberdjo & Mengo-Alien. Spalla's method enables the calculation of unpaid ULAЕ per transaction type, including overhead costs, & provides relative cost comparisons. It eliminates the need for manual studies & offers static benchmarks for parameter estimation.

→ Generalized approach

- The generalized approach can be applied to claim counts as well. Again, letting w_i be the amount of ULAЕ payments, we can calculate the ULAЕ-to-claim counts ratio, w_i , as:

$$w_i = \frac{m}{b}$$

where m claim count basis, b , can be calculated as:

$$b = (v_1 \times r) + (v_2 \times o) + (v_3 \times c)$$

which relates to the following ratios:

- r : reported claim counts
- o : open — — —
- c : closed — — —

→ v_1 : relative cost of handling the reporting of a claim

→ v_2 : — — — managing an open claim

→ v_3 : — — — closing a claim

→ unlike the dollar-based generalized approach, the sum of v_1 , v_2 , & v_3 does not have to equal 100%.

→ Next, as we did before, select w_i^* , or a form of w_i^* terms, which can be different for each CY to take inflation into account. Finally, the unpaid ULAЕ can be estimated as:

$$\text{Unpaid ULAЕ} = \sum_i w_i^* \times [(v_1 \times r) + (v_2 \times o) + (v_3 \times c)]$$

where:

- i is the number of claims reports of CY i
- o_i — — — open claims at the end of CY i
- c_i — — — claims to be closed during CY i

- Example → Given the following information as of December 31, 2008:

Calendar Year	Reported Claim Counts	Open Claim Counts	Closed Claim Counts	ULAE Payments
2006	1,000	5,000	3,000	\$20,000
2007	1,500	3,000	1,000	\$14,000
2008	2,000	3,500	2,000	\$18,000

- The relative cost of handling the reporting of a claim is 2.
- The relative cost of managing an open claim is 4.
- The relative cost of closing a claim is 1.

An actuary assumes the following claim counts for the next calendar year:

Calendar Year	Reported Claim Counts	Open Claim Counts	Closed Claim Counts
2009	3,000	2,500	1,000

Using the generalized approach, estimate the unpaid ULAЕ for calendar year 2009. Use an all-year straight average when determining any ratios used in the calculation.

→ calculating the claims basis, b , & the ratio, w_i , for each year:

CY	Claims Basis	ULAE/Basis
2006	$2 \times 1,000 + 4 \times 5,000 + 1 \times 3,000 = 25,000$	$\$20,000 / 25,000 = \0.800
2007	$2 \times 1,500 + 4 \times 3,000 + 1 \times 1,000 = 16,000$	$\$14,000 / 16,000 = \0.875
2008	$2 \times 2,000 + 4 \times 3,500 + 1 \times 2,000 = 20,000$	$\$18,000 / 20,000 = \0.900

- the all-year straight average ratio is $w^* = 0.8583$

- Lastly, using the same equation from above,

$$\text{Unpaid ULAЕ} = \$0.8583 \times (2 \times 3,000 + 4 \times 2,500 + 1 \times 1,000) = \$14,591.67$$

→ Assessment

- (a) Identify the fundamental assumption underlying a dollar-based approach to estimating ULAЕ liabilities.
(b) Identify the fundamental assumption underlying a count-based approach to estimating ULAЕ liabilities.
(c) Identify two considerations that could influence an actuary's decision to choose a dollar-based versus a count-based approach when estimating ULAЕ liabilities.

→ SOLUTION TO PART (A)

All dollar-based techniques assume that ULAЕ costs closely follow claim costs, where claim costs include losses and ALAE but exclude ULAЕ. Specifically, ULAЕ expenditures follow the general timing of claims (reported or paid), and are proportional to their size.

SOLUTION TO PART (B)

Count-based techniques assume that the cost of each claims transaction is the same regardless of claim size, and also assume that a claim which is open longer will cost more.

SOLUTION TO PART (C)

Various answers are acceptable, for example:

- A dollar-based technique might be preferable if ULAЕ expenditures follow the general timing of claims (reported or paid) and are proportional to their size.

- If the availability of data, i.e., the access to reliable and consistent data regarding the number of claims, is limited, then a dollar-based technique might be preferred.