

Reading: Friedland 15 (Evaluating Methods)
Model: Emergence Patterns
Problem Type: Calculate emergence in a future period

F-15 (010) Emergence (Problem 1)

Find Calculate the emergence of paid claims in the period 60 to 72

Given Here is the current information for a particular AY:

paid	claims	at	60	months	4,280
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12 - ultimate	CDF	2.27
24 - ultimate	CDF	1.39
36 - ultimate	CDF	1.17
48 - ultimate	CDF	1.06
60 - ultimate	CDF	1.02
72 - ultimate	CDF	1.01

Step 1 determine the 12-month period containing the period you're given

period **60** to **72** is contained in period **60** to **72**

Step 2 calculate the quantities required in the emergence formula (for step 3)

$$\begin{aligned}\text{ultimate} &= \text{paid @60} \times 60\text{-ultimate CDF} \\ &= 4,280 \times 1.02 \\ &= \mathbf{4,366}\end{aligned}$$

$$\begin{aligned}\text{unpaid @ 60} &= \text{ultimate} - \text{paid @60} \\ &= \mathbf{4,366} - 4,280 \\ &= 86\end{aligned}$$

$$\begin{aligned}\% \text{paid @ 60} &= 1 / 60\text{-ultimate CDF} \\ &= 1 / 1.02 \\ &= \mathbf{98.0\%}\end{aligned}$$

$$\begin{aligned}\% \text{paid @ 72} &= 1 / 72\text{-ultimate CDF} \\ &= 1 / 1.01 \\ &= 99.0\%\end{aligned}$$

$$\begin{aligned}\% \text{unpaid @ 60} &= 1 - \% \text{paid @ 60} \\ &= 1 - \mathbf{98.0\%} \\ &= 2.0\%\end{aligned}$$

Step 3 calculate the emergence in the 12-month period using the results from step 2

$$\begin{aligned}12\text{-mth emergence} &= \text{unpaid @ 60} \times (\% \text{paid @ 72} - \% \text{paid @ 60}) / (\% \text{unpaid @ 60}) \\ &= 86 \times (99.0\% - \mathbf{98.0\%}) / 2.0\% \\ &= \mathbf{42.6}\end{aligned}$$

Step 4 if the given period was NOT a 12-month interval then you must interpolate to get the final answer

given period =====> **60** to **72** which is **12** months

$$\begin{aligned}12\text{-mth emergence} &= \mathbf{42.6} \times \mathbf{12} / 12 \\ &= \mathbf{42.6} \text{ <== final answer}\end{aligned}$$

Reading: Friedland 15 (Evaluating Methods)
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F-15 (010) Emergence (Problem 2)

Find Calculate the emergence of paid claims in the period 24 to 33

Given Here is the current information for a particular AY:

paid	claims	at	24	months	280
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12 - ultimate	CDF	2.56
24 - ultimate	CDF	1.26
36 - ultimate	CDF	1.08
48 - ultimate	CDF	1.04
60 - ultimate	CDF	1.02
72 - ultimate	CDF	1.01

Step 1 determine the 12-month period containing the period you're given

period **24** to **33** is contained in period **24** to **36**

Step 2 calculate the quantities required in the emergence formula (for step 3)

$$\begin{aligned}\text{ultimate} &= \text{paid @24} \times 24\text{-ultimate CDF} \\ &= 280 \times 1.26 \\ &= \mathbf{353}\end{aligned}$$

$$\begin{aligned}\text{unpaid @ 24} &= \text{ultimate} - \text{paid @24} \\ &= \mathbf{353} - 280 \\ &= \mathbf{73}\end{aligned}$$

$$\begin{aligned}\% \text{paid @ 24} &= \frac{1}{1} \div 24\text{-ultimate CDF} \\ &= \frac{1}{1} \div 1.26 \\ &= \mathbf{79.4\%}\end{aligned}$$

$$\begin{aligned}\% \text{paid @ 36} &= \frac{1}{1} \div 36\text{-ultimate CDF} \\ &= \frac{1}{1} \div 1.08 \\ &= \mathbf{92.6\%}\end{aligned}$$

$$\begin{aligned}\% \text{unpaid @ 24} &= 1 - \% \text{paid @ 24} \\ &= 1 - \mathbf{79.4\%} \\ &= \mathbf{20.6\%}\end{aligned}$$

Step 3 calculate the emergence in the 12-month period using the results from step 2

$$\begin{aligned}\text{12-mth emergence} &= \text{unpaid @ 24} \times (\% \text{paid @ 36} - \% \text{paid @ 24}) / (\% \text{unpaid @ 24}) \\ &= 73 \times (92.6\% - \mathbf{79.4\%}) / 20.6\% \\ &= \mathbf{46.8}\end{aligned}$$

Step 4 if the given period was NOT a 12-month interval then you must interpolate to get the final answer

given period =====> **24** to **33** which is **9** months

$$\begin{aligned}\text{9-mth emergence} &= \mathbf{46.8} \times \mathbf{9} / 12 \\ &= \mathbf{35.1} \text{ <== final answer}\end{aligned}$$