

Reading: Friedland 10 (Cape Cod Method)
Model: 2018.Spring #18
Problem Type: Reserving Methods - CC with Pure Premium Trend Adjustments

F-10 (020) CC (Problem 1)

Find Calculate the ultimate for AY 2024 using the reported Cape Cod method.

Given

AY	rptd clms	CDF	pure premium trend
2023	6,400	1.20	0.891
2024	3,900	3.40	0.944
2025	1,600	5.60	1.000

CY	EP
2023	13,440
2024	18,720
2025	12,960

** no rate level adjustments*

** no premium trend*

Step 1 calculate the adjusted reported losses (*do not apply CDFs to the losses - we are not calculating the ultimate here*)

AY	rptd clms	x	PP trend	=	adjusted reported claims
2023	6,400	x	0.891	=	5,703
2024	3,900	x	0.944	=	3,682
2025	1,600	x	1.000	=	1,600
					10,985

Step 2 calculate the used-up-premium (UUP)

CY/AY	EP	/	CDF	=	UUP
2023	13,440	/	1.20	=	11,200
2024	18,720	/	3.40	=	5,506
2025	12,960	/	5.60	=	2,314
					19,020

Step 3 calculate the adjusted ECR at the level: 2024 (*you must back out the pure premium trend*)

$$\begin{aligned}
 \text{ECR} &= \text{Step 1} / \text{Step 2} / (\text{PP trend for AY 2024}) \\
 &= 10,985 / 19,020 / 0.944 \\
 &= 61.18\%
 \end{aligned}$$

Step 4 calculate the ultimate using the data for: 2024

$$\begin{aligned}
 \text{ultimate} &= \text{rptd clms} + (1 - 1 / \text{CDF}) \times \text{ECR} \times \text{EP} \\
 &= 3,900 + (1 - 1 / 3.4) \times 61.18\% \times 18,720 \\
 &= 11,984 \quad \text{<== final answer}
 \end{aligned}$$

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F-10 (020) CC (Problem 2)

Find Calculate the ultimate for AY 2023 using the reported Cape Cod method.

Given

AY	rptd clms	CDF	pure premium trend
2023	6,900	1.90	1.016
2024	4,300	4.00	1.008
2025	1,800	6.40	1.000

CY	EP
2023	17,250
2024	17,200
2025	16,380

** no rate level adjustments*

** no premium trend*

Step 1 calculate the adjusted reported losses (*do not apply CDFs to the losses - we are not calculating the ultimate here*)

AY	rptd clms	x	PP trend	=	adjusted reported claims
2023	6,900	x	1.016	=	7,011
2024	4,300	x	1.008	=	4,334
2025	1,800	x	1.000	=	1,800
					13,145

Step 2 calculate the used-up-premium (UUP)

CY/AY	EP	/	CDF	=	UUP
2023	17,250	/	1.90	=	9,079
2024	17,200	/	4.00	=	4,300
2025	16,380	/	6.40	=	2,559
					15,938

Step 3 calculate the adjusted ECR at the level: 2023 (*you must back out the pure premium trend*)

$$\begin{aligned}
 \text{ECR} &= \text{Step 1} / \text{Step 2} / (\text{PP trend for AY 2023}) \\
 &= 13,145 / 15,938 / 1.016 \\
 &= 81.17\%
 \end{aligned}$$

Step 4 calculate the ultimate using the data for: 2023

$$\begin{aligned}
 \text{ultimate} &= \text{rptd clms} + (1 - 1 / \text{CDF}) \times \text{ECR} \times \text{EP} \\
 &= 6,900 + (1 - 1 / 1.9) \times 81.17\% \times 17,250 \\
 &= 13,533 \quad \text{<== final answer}
 \end{aligned}$$