Reading: Friedland 10 (Frequency-Severity Methods)   F-11 (010) 2019.Spring Q15 (Problem)
Model: 2019.Spring #15
Problem Type: Reserving Methods - FS (Basic Method)

Find   Use a frequency-severity method to estimate the   unpaid   claims for AY 2025

Given   paid loss @ Dec 31, 2025   700

	Cumulative Reported Counts **(CRC)**			
AY	12	24	36	48
2022	250	238	245	260
2023	275	270	278	
2024	323	320		
2025	375			

	Cumulative Reported Loss ($000s) **(CPL)**			
AY	12	24	36	48
2022	1,250	1,280	1,325	1,430
2023	1,365	1,395	1,450	
2024	1,625	1,675		
2025	1,900			

* no development past 48 months

Step 1   develop reported counts to ultimate

=====> **link ratios for reported count triangle**

AY	12-24	24-36	36-48	**48-ult**
2022	0.952	1.029	1.061	
2023	0.982	1.030		
2024	0.991			
2025				
selected	**0.975**	**1.030**	**1.061**	**1.000**

=====> (last column) | **Tail Factor:** The triangle is fully developed as of 48 months. That means the 48-ult <u>tail factor</u> is equal to 1.0

=====> **calculate age-to-ultimate LDFs**

	12-ult	24-ult	36-ult	48-ult
age -> ult	1.065	1.093	1.061	**1.000**

<====== (**selected**) x (prior [age -> ult])
(calculate from right-to-left)

=====> **calculate ultimate counts based on latest reported counts**

	'25@12	'24@24	'23@36	'22@48
diagonal	375	320	278	260
ultimate	399	350	295	260

<====== (**diagonal**) x (age -> ult)

Step 2a   calculate CRS triangle   *(CRS = Cumulative Reported Severity)*

	Cumulative Reported <u>Severity</u> **(CRS)**			
AY	12	24	36	48
2022	5,000	5,378	5,408	5,500
2023	4,964	5,167	5,216	
2024	5,031	5,234		
2025	5,067			

Step 2b   develop reported severities to ultimate

=====> **link ratios for reported severity triangle**

AY	12-24	24-36	36-48	**48-ult**
2022	1.076	1.006	1.017	
2023	1.041	1.010		
2024	1.040			
2025				
selected	**1.052**	**1.008**	**1.017**	**1.000**

Tail Factor: The triangle is fully developed as of 48 months. That means the 48-ult <u>tail factor</u> is equal to 1.0

=====> **calculate age-to-ultimate LDFs**

	12-ult	24-ult	36-ult	48-ult
age -> ult	1.078	1.025	1.017	**1.000**

<====== (**selected**) x (prior [age -> ult])
(calculate from right-to-left)

=====> **calculate ultimate severities based on latest reported severities**

	'25@12	'24@24	'23@36	'22@48
diagonal	5,067	5,234	5,216	5,500
ultimate	5,463	5,363	5,304	5,500

<====== (**diagonal**) x (age -> ult)

Step 3a   calculate ultimate losses as: (ultimate counts) x (ultimate severities)

ultimate counts	399	350	295	260	<====== from Step 1
ultimate severities	5,463	5,363	5,304	5,500	<====== from Step 2b
ultimate losses (000s)	2,182	1,875	1,565	1,430	

Step 3b   calculate <u>unpaid</u> losses for AY 2025   <==== *pay attention to whether the question asks for* **ultimate** *or* **unpaid**

unpaid	=	ultimate	-	latest paid
	=	2,182	-	700
	=	1,482	*<-- final answer*	