Reading: Werner 15: Commercial Ratemaking
Model: 2018.Spring #15
Problem Type: Experience Modification Factor for WC Rating

Find Calculate the experience modification factor given the following Policy Year (PY) data.

Given

PY	Actual Primary Losses	Actual Excess Losses	Payroll
2020	500	6,060	105,000
2021	485	4,400	102,900
2022	470	2,940	121,275
Total	**1,455**	**13,400**	329,175

Expected loss rate per 100 of payroll	**4.00**	
D-Ratio	**0.20**	
Ballast value	1,880	= B
Weighting value	0.26	= w

Step 1a calculate the actual primary & excess losses and the experience TOTAL & excess losses

A(p)	=	**1,455**	<== given							
A(e)	=	**13,400**	<== given							
E	=	329,175	x	**4.00**	/	100	=	13,167	<== use expected loss rate	
E(e)	=	13,167	x	(1.0	-	**0.2)**	=	10,534	<== use D-ratio	

Step 1b calculate the weighting w

w	=	Z(e)	/	Z(p)
	=	...		
	=	0.26	<== *weight is given (no calculation necessary)*	

Step 2 substitute the above values into the "M" formula for the experience modification factor

M	=	[A(p) + w x A(e) + (1 - w) x E(e) + B] / (E + B)	
	=	0.971	<==== *final answer*

Note: *If we had the manual premium, we could multiply it by the experience modification factor we just calculated to get the final premium.*

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Problem Type: Experience Modification Factor for WC Rating

Find Calculate the experience modification factor given the following Policy Year (PY) data.

Given

PY	Actual Primary Losses	Actual Excess Losses	Payroll
2020	500	5,820	103,000
2021	465	3,960	111,300
2022	485	3,030	102,533
Total	**1,450**	**12,810**	316,833

Expected loss rate per 100 of payroll	**3.00**	
D-Ratio	**0.15**	
Ballast value	2,180	= B
Weighting value	0.29	= w

Step 1a calculate the actual primary & excess losses and the experience TOTAL & excess losses

A(p)	=	**1,450**	<== given							
A(e)	=	**12,810**	<== given							
E	=	316,833	x	**3.00**	/	100	=	9,505	<== use expected loss rate	
E(e)	=	9,505	x	(1.0	-	**0.15)**	=	8,079	<== use D-ratio	

Step 1b calculate the weighting w

w	=	Z(e)	/	Z(p)
	=	...		
	=	0.29	<== *weight is given (no calculation necessary)*	

Step 2 substitute the above values into the "M" formula for the experience modification factor

M	=	[A(p) + w x A(e) + (1 - w) x E(e) + B] / (E + B)	
	=	1.119	<==== *final answer*

Note: *If we had the manual premium, we could multiply it by the experience modification factor we just calculated to get the final premium.*