Reading: Friedland 07 (Development Technique)
Model: 2017.Fall #19
Problem Type: Reported Claims Development

Find

a Calculate ultimate claims for AY 2022 and 2023 using data as of year-end 2023

b Calculate a diagnostic showing a recent operational change and describe a likely scenario

Given

cumulative reported claims

AY	12	24	36	48
2020	96	191	227	237
2021	96	191	227	
2022	96	191		
2023	96			

cumulative paid claims

AY	12	24	36	48
2020	60	151	206	228
2021	60	151	206	
2022	60	151		
2023	60			

reported claims development technique ultimates:

AY	amt
2020	240
2021	240

a **link ratios for reported claim triangle**

AY	12-24	24-36	36-48	48-ult
2020	1.988	1.187	1.044	
2021	1.988	1.187		
2022	1.988			
2023				
selected	1.988	1.187	1.044	**1.014**

Trick: The triangle is not fully developed as of 48 months. You must calculate a tail factor using AY 2020 information as shown below.

= 240 / 237

AY 2020 ultimate

AY 12 @48 months

calculate age-to-ultimate LDFs

	12-ult	24-ult	36-ult	48-ult
age -> ult	2.500	1.257	1.059	**1.014**

<====== (**selected**) x (prior [age -> ult])

(calculate from right-to-left)

calculate ultimate losses based on latest reported losses

	'23@12	**'22@24**	**'21@36**	**'20@48**
diagonal	96	191	227	237
ultimate	240	240	240	240

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

Final answers:

AY 2022 ultimate loss based on reported losses: 240.000

AY 2023 ultimate loss based on reported losses: 240.000

b Since we're only given cumulative reported and paid triangles, we don't have many options for diagnostics. We could calculate incremental triangles, but we'll first try the obvious and calculate **paid / reported**.

cumulative paid / reported

AY	12	24	36	48
2020	0.63	0.79	0.91	0.96
2021	0.63	0.79	0.91	
2022	0.63	0.79		
2023	0.63			

Looking down the columns, we see there has been a general **no trend** in the paid/reported ratio

This likely means: *no material changes*

Possible scenarios corresponding to these observations are:

[1] no material change in claims handling

[2] no material change in case reserve adequacy

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a Calculate ultimate claims for AY 2022 and 2023 using data as of year-end 2023

b Calculate a diagnostic showing a recent operational change and describe a likely scenario

Given

cumulative reported claims

AY	12	24	36	48
2020	480	875	1,080	1,159
2021	462	863	1,001	
2022	444	852		
2023	429			

cumulative paid claims

AY	12	24	36	48
2020	300	756	1,029	1,140
2021	300	756	1,029	
2022	300	756		
2023	300			

reported claims development technique ultimates:

AY	amt
2020	1,200
2021	1,112

a **link ratios for reported claim triangle**

AY	12-24	24-36	36-48	48-ult
2020	1.823	1.234	1.073	
2021	1.870	1.160		
2022	1.917			
2023				
selected	1.870	1.197	1.073	**1.036**

Trick: The triangle is not fully developed as of 48 months. You must calculate a tail factor using AY 2020 information as shown below.

= 1,200 / 1,159

AY 2020 ultimate

AY 12 @48 months

calculate age-to-ultimate LDFs

	12-ult	24-ult	36-ult	48-ult
age -> ult	2.487	1.330	1.111	**1.036**

<====== (**selected**) x (prior [age -> ult])

(calculate from right-to-left)

calculate ultimate losses based on latest reported losses

	'23@12	**'22@24**	**'21@36**	**'20@48**
diagonal	429	852	1,001	1,159
ultimate	1,066	1,133	1,112	1,200

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

Final answers:

AY 2022 ultimate loss based on reported losses: 1,133

AY 2023 ultimate loss based on reported losses: 1,066

b Since we're only given cumulative reported and paid triangles, we don't have many options for diagnostics. We could calculate incremental triangles, but we'll first try the obvious and calculate **paid / reported**.

cumulative paid / reported

AY	12	24	36	48
2020	0.63	0.86	0.95	0.98
2021	0.65	0.88	1.03	
2022	0.68	0.89		
2023	0.70			

Looking down the columns, we see there has been a general **increase** in the paid/reported ratio

This likely means: *(paid values went up) OR (reported values went down) OR (a combination of both)*

Possible scenarios corresponding to these observations are:

[1] claims handling rules were LOOSENED

[2] case reserve adequacy DECREASED

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Problem Type: Reported Claims Development

Find

a Calculate ultimate claims for AY 2022 and 2023 using data as of year-end 2023

b Calculate a diagnostic showing a recent operational change and describe a likely scenario

Given

cumulative reported claims

AY	12	24	36	48
2020	290	574	680	710
2021	387	764	906	
2022	286	570		
2023	382			

cumulative paid claims

AY	12	24	36	48
2020	180	446	614	683
2021	234	590	735	
2022	171	439		
2023	223			

reported claims development technique ultimates:

AY	amt
2020	960
2021	1,279

a **link ratios for reported claim triangle**

AY	12-24	24-36	36-48	48-ult
2020	1.978	1.186	1.044	
2021	1.977	1.185		
2022	1.991			
2023				
selected	1.982	1.186	1.044	**1.353**

Trick: The triangle is not fully developed as of 48 months. You must calculate a tail factor using AY 2020 information as shown below.

= 960 / 710

AY 2020 ultimate

AY 12 @48 months

calculate age-to-ultimate LDFs

	12-ult	24-ult	36-ult	48-ult
age -> ult	3.317	1.674	1.412	**1.353**

<====== (**selected**) x (prior [age -> ult])

(calculate from right-to-left)

calculate ultimate losses based on latest reported losses

	'23@12	**'22@24**	**'21@36**	**'20@48**
diagonal	382	570	906	710
ultimate	1,268	954	1,279	960

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

Final answers:

AY 2022 ultimate loss based on reported losses: 954

AY 2023 ultimate loss based on reported losses: 1,268

b Since we're only given cumulative reported and paid triangles, we don't have many options for diagnostics. We could calculate incremental triangles, but we'll first try the obvious and calculate **paid / reported**.

cumulative paid / reported

AY	12	24	36	48
2020	0.62	0.78	0.90	0.96
2021	0.61	0.77	0.81	
2022	0.60	0.77		
2023	0.58			

Looking down the columns, we see there has been a general **decrease** in the paid/reported ratio

This likely means: *(paid values went down) OR (reported values went up) OR (a combination of both)*

Possible scenarios corresponding to these observations are:

[1] claims handling rules were TIGHTENED

[2] case reserve adequacy INCREASED

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Find

a Calculate ultimate claims for AY 2022 and 2023 using data as of year-end 2023

b Calculate a diagnostic showing a recent operational change and describe a likely scenario

Given

cumulative reported claims

AY	12	24	36	48
2020	1,440	2,625	3,240	3,476
2021	1,385	2,589	3,003	
2022	1,333	2,556		
2023	1,286			

cumulative paid claims

AY	12	24	36	48
2020	900	2,232	3,070	3,414
2021	878	2,213	2,755	
2022	857	2,195		
2023	837			

reported claims development technique ultimates:

AY	amt
2020	3,600
2021	3,337

a **link ratios for reported claim triangle**

AY	12-24	24-36	36-48	48-ult
2020	1.823	1.234	1.073	
2021	1.870	1.160		
2022	1.917			
2023				
selected	1.870	1.197	1.073	**1.036**

Trick: The triangle is not fully developed as of 48 months. You must calculate a tail factor using AY 2020 information as shown below.

= 3,600 / 3,476

AY 2020 ultimate

AY 12 @48 months

calculate age-to-ultimate LDFs

	12-ult	24-ult	36-ult	48-ult
age -> ult	2.487	1.330	1.111	**1.036**

<====== (**selected**) x (prior [age -> ult])

(calculate from right-to-left)

calculate ultimate losses based on latest reported losses

	'23@12	**'22@24**	**'21@36**	**'20@48**
diagonal	1,286	2,556	3,003	3,476
ultimate	3,198	3,400	3,337	3,600

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

Final answers:

AY 2022 ultimate loss based on reported losses: 3,400

AY 2023 ultimate loss based on reported losses: 3,198

b Since we're only given cumulative reported and paid triangles, we don't have many options for diagnostics. We could calculate incremental triangles, but we'll first try the obvious and calculate **paid / reported**.

cumulative paid / reported

AY	12	24	36	48
2020	0.63	0.85	0.95	0.98
2021	0.63	0.85	0.92	
2022	0.64	0.86		
2023	0.65			

Looking down the columns, we see there has been a general **increase** in the paid/reported ratio

This likely means: *(paid values went up) OR (reported values went down) OR (a combination of both)*

Possible scenarios corresponding to these observations are:

[1] claims handling rules were LOOSENED

[2] case reserve adequacy DECREASED