

Book of Triangles

Scenario: 0 (Base Case)

Amounts	Paid Loss		Development Age			
AY	12	24	36	48	60	72
2020	720	1,800	2,880	3,600	3,960	4,320
2021	720	1,800	2,880	3,600	3,960	
2022	720	1,800	2,880	3,600		
2023	720	1,800	2,880			
2024	720	1,800				
2025	720					

Counts	Paid Count		Development Age			
AY	12	24	36	48	60	72
2020	2	5	8	10	11	12
2021	2	5	8	10	11	
2022	2	5	8	10		
2023	2	5	8			
2024	2	5				
2025	2					

	paid loss ratio		Development Age			
AY	12	24	36	48	60	72
2020	10%	25%	40%	50%	55%	60%
2021	10%	25%	40%	50%	55%	
2022	10%	25%	40%	50%		
2023	10%	25%	40%			
2024	10%	25%				
2025	10%					

PAID dollars-per-count						
AY	average paid loss		Development Age			
	12	24	36	48	60	72
2020	360	360	360	360	360	360
2021	360	360	360	360	360	
2022	360	360	360	360		
2023	360	360	360			
2024	360	360				
2025	360					

Amounts	Rptd Loss		Development Age			
AY	12	24	36	48	60	72
2020	2,160	2,880	3,600	3,960	4,320	4,320
2021	2,160	2,880	3,600	3,960	4,320	
2022	2,160	2,880	3,600	3,960		
2023	2,160	2,880	3,600			
2024	2,160	2,880				
2025	2,160					

Counts	Rptd Count		Development Age			
AY	12	24	36	48	60	72
2020	6	8	10	11	12	12
2021	6	8	10	11	12	
2022	6	8	10	11		
2023	6	8	10			
2024	6	8				
2025	6					

	rptd loss ratio		Development Age			
AY	12	24	36	48	60	72
2020	30%	40%	50%	55%	60%	60%
2021	30%	40%	50%	55%	60%	
2022	30%	40%	50%	55%		
2023	30%	40%	50%			
2024	30%	40%				
2025	30%					

REPORTED dollars-per-count						
AY	average rptd loss		Development Age			
	12	24	36	48	60	72
2020	360	360	360	360	360	360
2021	360	360	360	360	360	
2022	360	360	360	360		
2023	360	360	360			
2024	360	360				
2025	360					

(1)	(2)	(3)	(4)	(5)	(6)	(7)		
CY	EP	avg. rate chg.	cum. avg. rt. lvl.	ann. expos. chg.	rt level adj. to 2025	on level EP	CY	EE
2020	7,200		0.0%		1.000	7,200	2020	12.0
2021	7,200	0.0%	0.0%	0.0%	1.000	7,200	2021	12.0
2022	7,200	0.0%	0.0%	0.0%	1.000	7,200	2022	12.0
2023	7,200	0.0%	0.0%	0.0%	1.000	7,200	2023	12.0
2024	7,200	0.0%	0.0%	0.0%	1.000	7,200	2024	12.0
2025	7,200	0.0%	0.0%	0.0%	1.000	7,200	2025	12.0

- (2) = given
 (3) = given
 (4) = $[1 + (4):\text{prior}] \times [1 + (3)] - 1.0$
 (5) = $[(2) / (2):\text{prior}] / [1 + (3)] - 1.0$
 (6) = $[1 + (4):2025] / [1 + (4)]$
 (7) = $(2) \times (6)$

	paid/rptd loss		Development Age			
AY	12	24	36	48	60	72
2020	0.33	0.63	0.80	0.91	0.92	1.00
2021	0.33	0.63	0.80	0.91	0.92	
2022	0.33	0.63	0.80	0.91		
2023	0.33	0.63	0.80			
2024	0.33	0.63				
2025	0.33					

	paid/rptd counts		Development Age			
AY	12	24	36	48	60	72
2020	0.33	0.63	0.80	0.91	0.92	1.00
2021	0.33	0.63	0.80	0.91	0.92	
2022	0.33	0.63	0.80	0.91		
2023	0.33	0.63	0.80			
2024	0.33	0.63				
2025	0.33					

Case O/S dollars-per-count						
AY	average case O/S		Development Age			
	12	24	36	48	60	72
2020	360	360	360	360	360	0
2021	360	360	360	360	360	
2022	360	360	360	360		
2023	360	360	360			
2024	360	360				
2025	360					

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Scenario: 8 (Claim Settlement Rate Speeds up by 12 months starting in CY 2023)

Amounts	Paid Loss		Development Age			
AY	12	24	36	48	60	72
2020	720	1,800	2,880	3,960	4,320	4,320
2021	720	1,800	3,600	3,960	4,320	
2022	720	2,880	3,600	3,960		
2023	1,800	2,880	3,600			
2024	1,800	2,880				
2025	1,800					

Counts	Paid Count		Development Age			
AY	12	24	36	48	60	72
2020	2	5	8	11	12	12
2021	2	5	10	11	12	
2022	2	8	10	11		
2023	5	8	10			
2024	5	8				
2025	5					

	paid loss ratio		Development Age			
AY	12	24	36	48	60	72
2020	10%	25%	40%	55%	60%	60%
2021	10%	25%	50%	55%	60%	
2022	10%	40%	50%	55%		
2023	25%	40%	50%			
2024	25%	40%				
2025	25%					

PAID dollars-per-count						
	average paid loss		Development Age			
AY	12	24	36	48	60	72
2020	360	360	360	360	360	360
2021	360	360	360	360	360	
2022	360	360	360	360		
2023	360	360	360			
2024	360	360				
2025	360					

Amounts	Rptd Loss		Development Age			
AY	12	24	36	48	60	72
2020	2,160	2,880	3,600	3,960	4,320	4,320
2021	2,160	2,880	3,600	3,960	4,320	
2022	2,160	2,880	3,600	3,960		
2023	2,160	2,880	3,600			
2024	2,160	2,880				
2025	2,160					

Counts	Rptd Count		Development Age			
AY	12	24	36	48	60	72
2020	6	8	10	11	12	12
2021	6	8	10	11	12	
2022	6	8	10	11		
2023	6	8	10			
2024	6	8				
2025	6					

	rptd loss ratio		Development Age			
AY	12	24	36	48	60	72
2020	30%	40%	50%	55%	60%	60%
2021	30%	40%	50%	55%	60%	
2022	30%	40%	50%	55%		
2023	30%	40%	50%			
2024	30%	40%				
2025	30%					

REPORTED dollars-per-count						
	average rptd loss		Development Age			
AY	12	24	36	48	60	72
2020	360	360	360	360	360	360
2021	360	360	360	360	360	
2022	360	360	360	360		
2023	360	360	360			
2024	360	360				
2025	360					

(1)	(2)	(3)	(4)	(5)	(6)	(7)		
CY	EP	avg. rate chg.	cum. avg. rt. lvl.	ann. expos. chg.	rt level adj. to 2025	on level EP	CY	EE
2020	7,200		0.0%		1.000	7,200	2020	12.0
2021	7,200	0.0%	0.0%	0.0%	1.000	7,200	2021	12.0
2022	7,200	0.0%	0.0%	0.0%	1.000	7,200	2022	12.0
2023	7,200	0.0%	0.0%	0.0%	1.000	7,200	2023	12.0
2024	7,200	0.0%	0.0%	0.0%	1.000	7,200	2024	12.0
2025	7,200	0.0%	0.0%	0.0%	1.000	7,200	2025	12.0

(2) = given

(3) = given

(4) = $[1 + (4):\text{prior}] \times [1 + (3)] - 1.0$ (5) = $[(2) / (2):\text{prior}] / [1 + (3)] - 1.0$ (6) = $[1 + (4):2025] / [1 + (4)]$ (7) = $(2) \times (6)$

	paid/rptd loss		Development Age			
AY	12	24	36	48	60	72
2020	0.33	0.63	0.80	1.00	1.00	1.00
2021	0.33	0.63	1.00	1.00	1.00	
2022	0.33	1.00	1.00	1.00		
2023	0.83	1.00	1.00			
2024	0.83	1.00				
2025	0.83					

	paid/rptd counts		Development Age			
AY	12	24	36	48	60	72
2020	0.33	0.63	0.80	1.00	1.00	1.00
2021	0.33	0.63	1.00	1.00	1.00	
2022	0.33	1.00	1.00	1.00		
2023	0.83	1.00	1.00			
2024	0.83	1.00				
2025	0.83					

Case O/S dollars-per-count						
	average case O/S		Development Age			
AY	12	24	36	48	60	72
2020	360	360	360	0	0	0
2021	360	360	0	0	0	
2022	360	0	0	0		
2023	360	0	0			
2024	360	0				
2025	360					

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Scenario: 8 (Comparison to Base Case)

* percentages represent changes from the
base case

Amounts	Paid Loss		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	10%	9%	0%
2021	0%	0%	25%	10%	9%	
2022	0%	60%	25%	10%		
2023	150%	60%	25%			
2024	150%	60%				
2025	150%					

Amounts	Rptd Loss		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	0%	0%	0%
2021	0%	0%	0%	0%	0%	
2022	0%	0%	0%	0%		
2023	0%	0%	0%			
2024	0%	0%				
2025	0%					

(1)	(2)	(3)	(4)	(5)	(6)	(7)		
CY	EP	avg. rate chg.	cum. avg. rt. lvl.	ann. expos. chg.	rt level adj. to 2025	on level EP	CY	EE
2020	0%						2020	0%
2021	0%	0%					2021	0%
2022	0%	0%					2022	0%
2023	0%	0%					2023	0%
2024	0%	0%					2024	0%
2025	0%	0%					2025	0%

Counts	Paid Count		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	10%	9%	0%
2021	0%	0%	25%	10%	9%	
2022	0%	60%	25%	10%		
2023	150%	60%	25%			
2024	150%	60%				
2025	150%					

Counts	Rptd Count		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	0%	0%	0%
2021	0%	0%	0%	0%	0%	
2022	0%	0%	0%	0%		
2023	0%	0%	0%			
2024	0%	0%				
2025	0%					

	paid loss ratio		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	10%	9%	0%
2021	0%	0%	25%	10%	9%	
2022	0%	60%	25%	10%		
2023	150%	60%	25%			
2024	150%	60%				
2025	150%					

	rptd loss ratio		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	0%	0%	0%
2021	0%	0%	0%	0%	0%	
2022	0%	0%	0%	0%		
2023	0%	0%	0%			
2024	0%	0%				
2025	0%					

	paid/rptd loss		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	10%	9%	0%
2021	0%	0%	25%	10%	9%	
2022	0%	60%	25%	10%		
2023	150%	60%	25%			
2024	150%	60%				
2025	150%					

	paid/rptd counts		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	10%	9%	0%
2021	0%	0%	25%	10%	9%	
2022	0%	60%	25%	10%		
2023	150%	60%	25%			
2024	150%	60%				
2025	150%					

PAID dollars-per-count						
	average paid loss		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	0%	0%	0%
2021	0%	0%	0%	0%	0%	
2022	0%	0%	0%	0%		
2023	0%	0%	0%			
2024	0%	0%				
2025	0%					

REPORTED dollars-per-count						
	average rptd loss		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	0%	0%	0%
2021	0%	0%	0%	0%	0%	
2022	0%	0%	0%	0%		
2023	0%	0%	0%			
2024	0%	0%				
2025	0%					

Case O/S dollars-per-count						
	average case O/S		Development Age			
AY	12	24	36	48	60	72
2020	0%	0%	0%	-100%	-100%	0%
2021	0%	0%	-100%	-100%	-100%	
2022	0%	-100%	-100%	-100%		
2023	0%	-100%	-100%			
2024	0%	-100%				
2025	0%					

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Scenario: 8 (Claim Settlement Rate Speeds up by 12 months starting in CY 2023)

Amounts	Paid Loss		Development Age			
AY	12	24	36	48	60	72
2020	720	1,800	2,880	3,960	4,320	4,320
2021	720	1,800	3,600	3,960	4,320	
2022	720	2,880	3,600	3,960		
2023	1,800	2,880	3,600			
2024	1,800	2,880				
2025	1,800		increase down columns			

Counts	Paid Count		Development Age			
AY	12	24	36	48	60	72
2020	2	5	8	11	12	12
2021	2	5	10	11	12	
2022	2	8	10	11		
2023	5	8	10			
2024	5	8				
2025	5		increase down columns			

	paid loss ratio		Development Age			
AY	12	24	36	48	60	72
2020	10%	25%	40%	55%	60%	60%
2021	10%	25%	50%	55%	60%	
2022	10%	40%	50%	55%		
2023	25%	40%	50%			
2024	25%	40%				
2025	25%		increase down columns			

PAID dollars-per-count						
	average paid loss		Development Age			
AY	12	24	36	48	60	72
2020	360	360	360	360	360	360
2021	360	360	360	360	360	
2022	360	360	360	360		
2023	360	360	360			
2024	360	360				
2025	360					

Amounts	Rptd Loss		Development Age			
AY	12	24	36	48	60	72
2020	2,160	2,880	3,600	3,960	4,320	4,320
2021	2,160	2,880	3,600	3,960	4,320	
2022	2,160	2,880	3,600	3,960		
2023	2,160	2,880	3,600			
2024	2,160	2,880				
2025	2,160					

Counts	Rptd Count		Development Age			
AY	12	24	36	48	60	72
2020	6	8	10	11	12	12
2021	6	8	10	11	12	
2022	6	8	10	11		
2023	6	8	10			
2024	6	8				
2025	6					

	rptd loss ratio		Development Age			
AY	12	24	36	48	60	72
2020	30%	40%	50%	55%	60%	60%
2021	30%	40%	50%	55%	60%	
2022	30%	40%	50%	55%		
2023	30%	40%	50%			
2024	30%	40%				
2025	30%					

REPORTED dollars-per-count						
	average rptd loss		Development Age			
AY	12	24	36	48	60	72
2020	360	360	360	360	360	360
2021	360	360	360	360	360	
2022	360	360	360	360		
2023	360	360	360			
2024	360	360				
2025	360					

(1)	(2)	(3)	(4)	(5)	(6)	(7)
CY	EP	avg. rate chg.	cum. avg. rt. lvl.	ann. expos. chg.	rt level adj. to 2025	on level EP
2020	7,200		0.0%		1.000	7,200
2021	7,200	0.0%	0.0%	0.0%	1.000	7,200
2022	7,200	0.0%	0.0%	0.0%	1.000	7,200
2023	7,200	0.0%	0.0%	0.0%	1.000	7,200
2024	7,200	0.0%	0.0%	0.0%	1.000	7,200
2025	7,200	0.0%	0.0%	0.0%	1.000	7,200

- (2) = given
 (3) = given
 (4) = $[1 + (4):\text{prior}] \times [1 + (3)] - 1.0$
 (5) = $[(2) / (2):\text{prior}] / [1 + (3)] - 1.0$
 (6) = $[1 + (4):2025] / [1 + (4)]$
 (7) = $(2) \times (6)$

	paid/rptd loss		Development Age			
AY	12	24	36	48	60	72
2020	0.33	0.63	0.80	1.00	1.00	1.00
2021	0.33	0.63	1.00	1.00	1.00	
2022	0.33	1.00	1.00	1.00		
2023	0.83	1.00	1.00			
2024	0.83	1.00				
2025	0.83		increase down columns			

	paid/rptd counts		Development Age			
AY	12	24	36	48	60	72
2020	0.33	0.63	0.80	1.00	1.00	1.00
2021	0.33	0.63	1.00	1.00	1.00	
2022	0.33	1.00	1.00	1.00		
2023	0.83	1.00	1.00			
2024	0.83	1.00				
2025	0.83		increase down columns			

Case O/S dollars-per-count						
	average case O/S		Development Age			
AY	12	24	36	48	60	72
2020	360	360	360	0	0	0
2021	360	360	0	0	0	
2022	360	0	0	0		
2023	360	0	0			
2024	360	0				
2025	360		decrease down columns			