18. (4 points)

An insurance company has the following claims information as of December 31, 2013:

Cumulative Paid Claims ($000s)

Accident Year	12 Months	24 Months	36 Months
2011	1,000	1,500	1,815
2012	1,020	1,530	
2013	1,040		

Cumulative Reported Claims ($000s)

Accident Year	12 Months	24 Months	36 Months
2011	1,100	1,650	1,815
2012	1,220	1,830	
2013	1,340		

Case Outstanding Claims ($000s)

Accident Year	12 Months	24 Months	36 Months
2011	100	150	0
2012	200	300	
2013	300		

Cumulative Open Claim Counts

Accident Year	12 Months	24 Months	36 Months
2011	1,000	1,100	1,155
2012	1,000	1,100	
2013	1,000		

Cumulative Closed Claim Counts

Accident Year	12 Months	24 Months	36 Months
2011	900	1,080	1,155
2012	900	1,080	
2013	900		

- No development occurs beyond 36 months.
- There are no partial payments.

Estimate ultimate claims for accident year 2013 using two reserving techniques that are consistent with a diagnostic review of the data.

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EXAM 5 SPRING 2014 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION: 18

TOTAL POINT VALUE: 4 points

LEARNING OBJECTIVE(S): B5

NOTE FROM THE EXAMINATION COMMITTEE:

The phrase "Cumulative Open Claim Counts" as printed in the exam was intended to read "Cumulative Reported Claim Counts." In grading the question, graders accounted for all possible interpretations of the "Cumulative Open Claim Counts" triangle, including:

- Candidates treating it as being the "Open Claim Counts" triangle
- Candidates treating it as being the "Cumulative Reported Claim Counts" triangle

SAMPLE/ACCEPTED ANSWERS:

Sample 1:

avg paid = paid claims / closed cnt

	12	24	36	--> 2% yr to yr change	
11	1,111	1,389	1,571	2%	2%
12	1,133	1,417		2%	
13	1,156				

closed cnt /total cnt

	12	24	36	--> Consistent
11	0.474	0.485	0.5	
12	0.474	0.485		
13	0.474			

avg case o/s = case/open

	12	24	36	
11	0.1	0.136	0	--> very large yr to yr changes --> above
12	0.2	0.272		inflation it would seem.
13	0.3			

Claim Settlement & payments seem stable so paid development method works.
Claim counts very stable - didn't show triangle, but equal down each column
So will use a FxS method with developed counts and developed paid

EXAM 5 SPRING 2014 SAMPLE ANSWERS AND EXAMINER'S REPORT

Severity

		12 - 24	24 - 36	
	11	1.5	1.21	
	12	1.5		
paid dev factors --> using weighted avg	A:A	1.5	1.21	
	A:U	1.815	1.21	1

Ult =1040 x1.815 = 1,887,600

Closed Cnt

AY	12	24	36
11	900	1080	1155
12	900	1080	
13	900		

Sel	12-24	24-36	36-ult	
A:A =	1.2	1.069	1	--> based on st avg
A:U =	1.283	1.069	1	

avg paid A:A tri --> see 1st page for avg paid triangle

AY	12-24	24-36	36-ult
11	1.25	1.131	
12	1.251		
13			

Sel A:A =	1.25	1.131	1	--> st avg
A:U =	1.414	1.131	1	

ult count = 900 x1.283 = 1155
ult sev = 1.156 x 1.414 = 1.635
ult claims = ult count x ult sev = 1155 x 1.635=1,888,425

EXAM 5 SPRING 2014 SAMPLE ANSWERS AND EXAMINER'S REPORT

Sample 2:

AVG Case Per Open

12		24		36
1000		7500		0
2000	2	15000	2	
3000	1,5			

= 300000/(1100-1080)

*Assume cumulative open claim counts should be cumulative reported Claim Counts esp if no development after 36 months, Reported = Closed Counts and none open @ 36 months & no case @ 36 months.

AVG Paid Per Closed

12		24		36
1111,11		1388,89		1571,428
1133,33	1,02	1416.67	1,02	
1155,56	1,02			

= 1530000/1080

Closed Claim Cnts: Report

12	24	36
0,9	0,98	1
0,9	0,98	1
0,9		

--> indicates no claim settlement increases /speed up in payment.

average case per open is increasing at a greater rate than average paid per closed indicating increased case strengthening.

Use Reported Berquist Sherman method w/ 2% severity trend from paid trend rate.

Adjusted Case Per Open

12	24	36
2883,5	14705	0
2941.176	15000	
3000		

= 3000/1.02

Use BS to adjust all diagnos of reported triangle to current level of case adequacy.

Adjusted Rep triangle ($000s)

12	24	36
1288,4	1794,1	1815
1314	1830	
1340		

2941.174*100/1000+1020

100 is open counts, 1020 is paid $.

link ratios

12-24	24-36	36-ult	select volume wtd averages
1,3926	1,0116	1	

2013: 1340 * 1.3926 * 1.0116 = $1887.857K

Use Paid Development method b/c it is not affected by changes in case.

12-24	24-36	36 to ult
1,5	1,21	1

2013: 1040 * 1.5 * 1.21 = 1887.6K

EXAM 5 SPRING 2014 SAMPLE ANSWERS AND EXAMINER'S REPORT

EXAMINER'S REPORT:

The methods that can be applied in this question are:

1. Berquist-Sherman method to adjust case reserve adequacy
2. Paid development method
3. Frequency-Severity (paid) method 1
4. Frequency-Severity (paid) method 3.

Candidates were expected to identify the increase in case adequacy pattern in the data. From there, it was expected that the candidate would use the B-S method. Candidates were also expected to point out the stability in the claim counts or disposal rates. In order for the candidates to receive credit, it was expected that they would first calculate diagnostics from the data, interpret it and link that to the use of the appropriate method based on the diagnostic given.

This question is considered to be a bit challenging because the candidate needs to understand multiple reserving techniques in order to calculate the diagnostics and choose the correct method.

Most candidates selected the Berquist-Sherman method and the paid development method.

Some candidates used the right methods but didn't provide enough diagnostics to support the selected methods.

In utilizing the Berquist-Sherman method to adjust the case reserves, almost all the candidates knew to trend the average case outstanding from the current level to previous years. Most candidates correctly calculated and identified the paid severity trend as the right trend. A common error for some candidates was to use the reported severity trend, average outstanding trend, or some arbitrary trend.

In the paid development method, since the LDFs are stable and the calculations are simple, almost all candidates received full credit when selecting this method.

A small group of candidates selected the Frequency-Severity (FS) methods. Most received full credit for using the paid FS, although some of them incorrectly used the reported severity instead. Some were confused by the severity of cumulative paid losses and the severity of incremental paid amount at each age. Almost all candidates calculated the claim counts correctly if they did select this method.

The reported LDFs are stable coincidentally which leads a few candidates to wrongly select the reported development method. Very few candidates incorrectly selected the case outstanding method.

Overall, candidates performed well on this question; despite the printed error in the question itself, most candidates treated the reported count triangle as intended.