14. (2.5 points)

Given the following reported claims data:

Size of Loss	Reported Claim Counts	Reported Ground-Up Losses
X <= $1,000	120	$75,000
$1,000 < X <= $4,000	117	$209,000
$4,000 < X	3	$22,000

Individual claims above $4,000 are: $5,500, $6,500, and $10,000.

a. (0.75 point)

Calculate the increased limits factor for an increased limit of $6,000 and a basic limit of $4,000.

b. (0.75 point)

Calculate the combined loss elimination ratio for a policy with a $1,000 deductible and a policy limit of $3,000.

c. (1 point)

Briefly discuss two potential issues when using historical data from policies with deductibles or limits to price deductible factors. Propose a solution for each issue.

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EXAM 5 SPRING 2015 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION: 14

TOTAL POINT VALUE: 2.5

LEARNING OBJECTIVE(S): A9

SAMPLE/ACCEPTED ANSWERS:

Part a: 0.75 point

Sample 1:

LAS (4,000) = (75,000 + 209,000 + 3 x 4,000) / (120 + 117 + 3) = 1,233
LAS (6,000) = (75,000 + 209,000 + 5,500 + 2 x 6,000) / (120 + 117 + 3) = 1,256
ILF (6,000) = 1,256 / 1,233 = 1.01

Sample 2:

Losses limited to 4,000 = 296,000
Losses limited to 6,000 = 301,500
ILF (6,000) = 301,500 / 296,000 = 1.019

Part b: 0.75 point

Sample 1:

Total losses = 75,000 + 209,000 + 22,000 = 306,000
Losses eliminated = 75,000 + 1,000 x 120 + 1,500 + 2,500 + 6,000 = 205,000
LER = 205 / 306 = 0.6699

Sample 2:

Total losses = 75,000 + 209,000 + 22,000 = 306,000
Losses retained = (209,000 – 1,000 x 117) + (3 x 3,000) = 101,000
LER = 1 – 101 / 306 = 0.6699

Part c: 1 point

Sample 1:

Issue: Policies with deductibles may only have loss amounts in excess of deductible or if deductible decreases may be missing data below current deductible.
Solution: Use loss ratio approach or fit theoretical severity distribution.

Sample 2:

Issue: Policies with policy limits may have loss data censored by policy limits.

Solution: Use GLM approach or use industry data

Sample 3:

Issue: Higher limits will suffer higher severity trends.
Solution: Trend losses before calculating deductible factors.

Sample 4:

Issue: Higher limits experience greater loss development.
Solution: Develop losses before calculating deductible factors.

Sample 5:

Issue: Insureds may self-select certain deductibles and limits.
Solution: Use GLM.

Sample 6:

Issue: Claim reporting behavior may vary depending on insured's deductible.
Solution: Use GLM.

Sample 7:

Issue: Data thin at higher layers.
Solution: Use smoothing technique or fit data to curve.

Sample 8:

Issue: Distortion in deductibles/limits causes average severity to shift over time.
Solution: Use industry data or GLM.

EXAMINER'S REPORT:

General Commentary

Candidate performance on this question was mixed, with candidates performing well on part a., but struggling more with parts b. and c.

Part a

Candidates were expected to show basic knowledge of ILF calculations, including both the numerator and denominator. Common errors were in calculating LAS (6,000) or using total losses rather than LAS (6,000) in the denominator.

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Part b

Candidates struggled more on part b. than on part a. Many candidates interpreted the 3,000 policy limit as being applied on top of the 1,000 deductible. This misunderstanding made the question impossible to answer with the given information.

Another common mistake was calculating (1 – loss elimination ratio) rather than the loss elimination ratio.

Part c

Candidates struggled with this part of the question.

Some candidates provided responses not related to deductibles or limits, such as mentioning that losses need to be trended or developed.

Another common incorrect response was stating that companies need to collect ground up data or ask customers to report losses under the deductible, after stating truncation/censorship as an issue.