

12. (2.5 points)

Given the following for an insurance company:

$$\text{Premium} = (\text{Base Rate}) \times (\text{Rating Factor 1}) \times (\text{Rating Factor 2})$$

Variable 1 Segment	Rating Factor 1
A	0.90
B	2.00
C	1.00

Variable 2 Segment	Rating Factor 2
X	0.75
Y	0.95
Z	1.00

Earned Exposures			
	Variable 1		
Variable 2	A	B	C
X	800	1,500	600
Y	300	750	500
Z	500	500	1,500

Reported Loss & ALAE (\$)			
	Variable 1		
Variable 2	A	B	C
X	320,000	2,100,000	400,000
Y	170,000	1,535,000	500,000
Z	305,000	1,100,000	1,600,000

- The base rate is \$1,000.
- The base classification for Variable 1 is C.
- The proposed overall rate level change is 0%.

a. (1.5 points)

Calculate the indicated relativities for Variable 1 using the adjusted pure premium method.

b. (0.5 point)

Calculate the proposed base rate assuming the company selects half of the indicated relativity change for each segment of Variable 1.

c. (0.5 point)

Briefly describe two social criteria for evaluating the appropriateness of rating variables.

EXAM 5 FALL 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION: 12

TOTAL POINT VALUE: 2

LEARNING OBJECTIVES: A7, A8

SAMPLE ANSWERS

Part a: 1.5 points

Sample 1

	Adjusted Exposures	Loss	Adjusted Pure Prem	Relativity to "C"
A	1,385	795,000	574	0.56
B	2,338	4,735,000	2,026	1.96
C	2,425	2,500,000	1,031	1.00

Sample 2

	Adjusted Exposures	Reported Loss/ALAE	Indicated Adjusted Pure Prem	Indicated Relativity	Indicated Relativity @ Base
A	1,385	795,000	574.01	0.4394	0.5568
B	2,338	4,735,000	2025.67	1.5508	1.9649
C	2,425	2,500,000	1030.93	0.7892	1.0000
Total	6,148	8,030,000	1306.22	1.0000	

Part b: 0.5 point

Sample 1

Adj EE	Current	Indicated	Selected
1,385	0.90	0.5600	0.73
2,338	2.00	1.9600	1.98
2,425	1.00	1.0000	1.00
6,148	1.36		1.31
		Ofb	1.035
		New Rate	1,035

Sample 2

Adj EE	Current	Indicated	Change	1/2 Chg	Premium	Change
1,385	0.90	0.5600	-38%	-19%	1,246,500	-19%
2,338	2.00	1.9600	-2%	-1%	4,675,000	-1%
2,425	1.00	1.0000	0%	0%	2,425,000	0%
					8,346,500	-3.4%
						1.035
					New C rate	1035.0

Part c: 0.5 point

EXAM 5 FALL 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

<ul style="list-style-type: none">• Affordability - insurance should be affordable for everyone• Controllability - should be able to change the class you are in to get a lower rate• Privacy - should not infringe on someone's privacy• Causality/Logical/Intuitive - causal relationship to loss makes sense
EXAMINER'S REPORT
Candidates were expected to calculate class relativities using the adjusted pure premium method, off-balance a final base rate given constraints, and recognize social criteria of rating variables.
Part a
<p>Candidates were expected to understand the adjusted pure premium methodology and how to calculate class relativities.</p> <p>Common mistakes include:</p> <ul style="list-style-type: none">• Using unadjusted exposures• Not using the base class to rebase indicated relativities
Part b
<p>Candidates were expected to understand how to calculate a proposed base rate given a premium change goal and a constraint on the change in class relativities.</p> <p>Common mistakes include:</p> <ul style="list-style-type: none">• Using exposures rather than adjusted exposures as the weights for total relativity change• Using indicated relativities rather than selected relativities
Part c
<p>Candidates were expected to understand social criteria of rating variables.</p> <p>Common mistakes include:</p> <ul style="list-style-type: none">• Using legal criteria• Using operational criteria