10. (1.5 points)

An actuarial analyst has experience rated five groups of policies under the current rating plan and two alternatives, Plan A and Plan B. The results are as follows:

		Manual Loss Ratio			Standard Loss Ratio		
Risks with	Manual Premium ($000)	Current Plan	Proposed Plan A	Proposed Plan B	Current Plan	Proposed Plan A	Proposed Plan B
Lowest mod	$50,000	0.70	0.70	0.70	1.03	0.97	0.89
Next lowest	$70,500	0.85	0.80	0.90	1.02	1.02	0.92
Middle	$98,000	1.05	1.05	1.05	0.98	0.96	0.93
Next highest	$150,000	1.20	1.15	1.15	0.97	1.02	1.06
Highest mod	$10,000	1.45	1.55	1.35	0.96	1.06	1.11

a. (0.75 point)

The off-balance factor for the current plan is 1.05 and for proposed Plan A is 0.99. The analyst says that proposed Plan A performs better because the off-balance is less than 1. Critique this statement.

b. (0.75 point)

The actuarial analyst recommends staying with the current plan because it has made the higher mod groups more attractive to write and it has the least standard loss ratio spread. Critique this reasoning.

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Question 10:

Part a
Model Solution 1

An Off balance factor is a measure of the weighted modification factor. An off balance less than 1 does not necessarily mean that the plan is better. To decide which plan is best, we can find the plan that can best identify the differenced in the groups, and also best corrects the differences. We can do this by looking at the manual loss ratios for whether the plan identifies the differences. The more spread the manual loss ratios, the better the plan identifies. We then look at standard loss ratio for correcting the differences. The flatter the loss ratio, the better.
By examining the loss ratios of the 3 plans, all of them do well for identifying differences because the manual loss ratio increases as risk potential increases. Plan A does well for correcting the difference because the standard loss ratios are flat and no trend.

Examiner's Comments:
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Many candidates ignored the crux of the question as it related to the off balance. To receive full credit, the candidate must state that the off balance is not an indicator of plan performance, what the off balance is or represents (weighted average mod, or standard premium/manual premium) and finally what metrics can be used to evaluate the performance of the experience rating plan. Many candidates stated why A is the better plan, which is relevant to part (b) of the question, but did not comment on the actuary's reasoning that it is better because of the Off Balance, and therefore did not receive full credit.
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Part b
Model Solution 1

The current plan has a better loss ratio for higher mod groups. In fact, the current plan has a decreasing trend on standard loss ratios. This means that too much credibility is assigned to the actual data in current plan. Our goal of the plan should be resulting a standard loss ratio close to 1 and with no clear trend. The current plan violates this rule. Plan B has an increasing trend on the standard loss ratio, meaning too little credibility is assigned. Plan A is the best among the three because the standard loss ratio is flat and no trend.

Model Solution 2

Having a low standard loss ratio variance is good, but you also need to consider any pattern in the LRs. Dorweiler's necessary condition is that all standard Loss ratios across risks must be equal, or at least similar enough so insurers do not prefer one over the other. The current plan did make higher mod groups more attractive but it

also made lower mod groups less attractive to write. The current plan gives too much credibility to the risks' experience, which is causing the downward trend. Plan B on the other hand, doesn't give enough credibility. Based on Dorweiler's test, Plan A would be the better option.

Model Solution 3

Unfortunately, competitive pressure may lead to adverse selection under this plan. Essentially, Mods are too high for some of the worse than expected risks because too much credibility is assigned to their experience. This is what is driving the favorable standard loss ratios under the current plan. Plan A may be more equitable because of seemingly random nature of its standard loss ratios.

Examiner's Comments:

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Most of the candidates answered satisfactorily by pointing out the trends in the SLRs or MLRs and stating what these trends indicated (e.g. oversensitivity, balance, identifying differences among risk groups).

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