

3. (2.25 points)

A personal automobile insurance company is considering changing its exposure base from car-years to hours driven.

a. (1.5 points)

Evaluate hours driven using three criteria of a good exposure base.

b. (0.75 point)

The company is also considering keeping its current exposure base as car-years but including hours driven in its risk classification system. Briefly discuss the appropriateness of adding this risk characteristic to the company's risk classification system using three considerations from the Actuarial Standard of Practice No. 12: Risk Classification (for All Practice Areas).

EXAM 5 SPRING 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 3	
TOTAL POINT VALUE: 2.25	LEARNING OBJECTIVE(S): A1, A7
SAMPLE ANSWERS	
Part a: 1.5 points	
<u><i>Sample Responses for "Proportional to Expected Loss" Criteria</i></u>	
<ul style="list-style-type: none"> Hours driven is proportional to expected loss. The more you drive the more likely you are to incur a loss Hours driven is not proportional to expected loss, since some areas have more traffic than others, for example. For that reason, more hours driven does not translate to higher expected loss, necessarily. 	
<u><i>Sample Responses for "Practical" Criteria</i></u>	
<ul style="list-style-type: none"> Is objective but would be very costly to verify and could be subject to manipulation if obtained by self-reporting Car-years is very easy to determine, hours driven is not. It would require expensive telematics to verify Hours driven is verifiable with telematics Hours driven from an individual would be easy, inexpensive and objective to gain the information 	
<u><i>Sample Responses for "Historical Precedence" Criteria</i></u>	
<ul style="list-style-type: none"> The current exposure base is car-years. If change to hours driven, it may cause large premium swings to insured Since the insurer is changing the exposure base this can be very expensive and time consuming to modify the current rating structure It would be very expensive and difficult to change exposure bases. Would have to restate historical data if analysis of past was ever performed It is not a preexisting exposure base used within the industry. Thus, there may not be industry benchmark or other information 	
Part b: 0.75 point	
<p><i>[Examiner's note: many sample responses are provided below. Any 3 responses would receive credit, provided 3 considerations from ASOP 12 were covered. In other words, candidates would not receive full credit for providing two responses both discussing the "privacy" consideration.]</i></p> <ul style="list-style-type: none"> The risk characteristic should have a relationship to expected losses. The hours driven is proportional to future cost since the more hours on the road, the higher likelihood of being involved in an accident. Hours driven does not have a strong relationship to expected loss because people driving on the highway will travel further than someone driving the same amount of time in the city. Objective: If hours driven is well defined and measured through a device (rather than self-reported) it may be a good rating variable and not subjective. It is not easy to verify and the cost of collecting it will be expensive. Hours driven may not be appropriate to use because it can be manipulated by drivers if self-reported. 	

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- Causality: Hours driven has a cause and effect relationship with losses. It is intuitive that more hours driven would result in more accidents & more losses, thus public acceptance would occur.
- Legal: This is probably a legal variable but would want to confirm before implementing.
- Regulators are likely to approve of this addition. No legal objections are likely.
- Hours driven hasn't been commonly used as a rating characteristic for personal auto insurance, thus it is less likely to be accepted by society.
- Using hours driven may help avoid adverse selection – risks that drive much more than average can be priced appropriately (rather than underpricing with the insurer attracting many such risks)
- Credibility: Classes can be made large enough to have enough drivers in them to provide reasonable credibility
- A risk characteristic should be statistically significant meaning different subsets of hours driven should have significantly different expected losses.
- The classes can be homogeneous if they are created so that the risks within them are similar with no clear subclasses.
- Homogeneity: Risks within some group should have similar expected loss. But hours driven is not directly proportional to expected loss. With different speed, car type and driving habits, same hours driven might show different expected loss.
- Affordability: Using hours driven might make insurance unaffordable for low income insureds with longer commutes.
- Hours driven is controllable by the insured. They can drive less hours to keep their premium down.
- Controllability: Insureds likely have little control over how much they drive, as many drive primarily to work. Not a desirable characteristic.
- Privacy: If devices are installed to track hours driven, could be seen as an invasion of personal privacy.
- Privacy: Hours driven is not private information so it's likely to be accepted by the public.

EXAMINER'S REPORT

Candidates were expected to know the three criteria of a good exposure base, and be familiar with the considerations of a risk characteristic from ASOP 12 to evaluate how the considerations apply to the exposures bases discussed in this question.

Candidates performed well on this question, which was not particularly challenging. The question represented the syllabus materials in a straightforward manner, so candidates were generally able to cover the concepts thoroughly in their responses.

Part a

Candidates were expected to know the three criteria of a good exposure base and evaluate a potential exposure base using each criteria: Proportional to Expected Loss, Practical, and Historical Precedence.

Candidates were expected to evaluate the proposed exposure base by explaining why they believed it met or did not meet each of the three criteria. Simply listing the criteria, or only stating that the proposed exposure base met or did not meet the criteria without any further explanation was not a sufficient response.

EXAM 5 SPRING 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

- Proportional to expected loss: candidates needed to demonstrate that there was or wasn't a relationship between hours driven and expected loss
- Practical: candidates needed to demonstrate it would or wouldn't be practical based on whether it was or wasn't either objectively defined, easy/inexpensive to obtain, easy/inexpensive to verify, or subject to manipulation
- Historical Precedence: candidates needed to demonstrate whether or not this was met by explaining the change of base based on either impact to systems (IT costs), impact to policyholders (premium swings) or data (current data would be difficult to work with, there would be a lack of industry benchmarks, etc).

Common mistakes included:

- Proportional to Expected Loss: the most common mistakes were just listing the criteria, or only saying that it is more/less proportional than car-years. A small number of candidates interpreted hours driven to mean the hours of a single particular drive (e.g., in a single trip, with more hours driven the driver is more likely to get tired and fall asleep)
- Practical: common mistakes were evaluating miles driven instead of hours driven and incorrectly explaining a reason hours meets or does not meet criteria (e.g., it is subject to manipulation because the insured can drive as much or as little as they want)
- Historical Precedence: common mistakes included only stating that the current base is car-years, so hours driven doesn't meet historical precedence, and saying that hours driven doesn't meet historical precedence only because other companies/industry don't currently use hours driven (and not making the connection that there would be a lack of industry benchmarks).

Part b

Candidates were expected to evaluate hours driven as a risk classification variable based on three considerations from ASOP 12. There are approximately a dozen different considerations listed in the syllabus readings.

Candidates were expected to explain why they believed hours driven met or did not meet each consideration. Simply listing the considerations, or only stating that the base met or did not meet a consideration without any further explanation was not a sufficient response.

Differences in opinion on whether hours driven met or did not meet a certain criteria were not penalized. For example, some candidates thought privacy might be violated by this variable, while others did not. Both were awarded credit provided the candidate explained his or her reasoning.

Common mistakes included:

- Listing the considerations with no explanation
- Using the same consideration more than once
- Saying that hours driven meets or does not meet a certain consideration without any explanation