00:00:03

Welcome to the CAS Answering and Grading Insights video, your inside look at how to approach and answer items using exam content and how they are graded.

00:00:12

This is a joint project between the Candidate Advocate Working Group and Admissions.

00:00:16

One of the biggest challenges we've heard that candidates face is understanding what graders are looking for in their answers to receive full credit.

00:00:24

In this video, we'll walk step-by-step through a constructed response item from the Fall 2024 sitting of Exam 5.

00:00:31

These items are now retired and will not be tested moving forward.

00:00:35

You'll see how a candidate might approach the response and then hear directly from a grader on how a response will be evaluated.

00:00:41

Each video will break down key elements of a strong response, common mistakes to avoid, and how points are awarded, giving you the knowledge to refine your exam strategy and improve your performance.

00:00:52

In this video, we begin with the candidate introducing the sample exam question.

00:00:56

You will then observe the candidate's approach to solving the problem as if they were sitting for the actual exam.

00:01:02

Following this, a grader will provide insights into how the response would be evaluated and scored.

00:01:07

An accompanying Excel workbook is provided to follow along with the problem yourself.

00:01:12

Timestamps have been included for ease of navigation between sections, and a full transcript is also available for reference.

00:01:18

Let's get started.

00:01:27

Hi, I'm the candidate and I'm going to be attempting this problem.

00:01:30

So it says, given the following output for three additional variables being considered for a multiplicative severity GLM.

00:01:39

I see that we have some graphs.

00:01:40

I'll enlarge that image in a second, but I'm going to read the rest of the problem.

00:01:44

It says all classes have sufficient exposures to be considered credible.

00:01:49

and to explain whether each variable should be included in the final GLM utilizing the modeled results and validation results above.

00:01:59

So I see that we have three variables and the problem is 1.5 points.

00:02:06

So in my mind that makes me think each variable is going to be worth about .5 points.

00:02:13

So that's maybe one to two sentences per variable.

00:02:16

So I'm going to click to enlarge.

00:02:20

And here we have our graphs.

00:02:22

I'm going to make them a little bigger.

00:02:32

All right, so the first set of graphs shows the variable's effect on severity.

00:02:38

We have the varying levels of the variable as well as the factors selected by the GLM model.

00:02:45

And in the solid orange lines, we have the GLM result and the dotted blue lines shows the one-way results.

00:02:52

I also have in the second column, the validation results on the holdout sample.

00:02:58

So we have the levels of the variable, the severity, and again, the solid orange lines shows the modeled result and the dotted blue shows the actual result.

00:03:09

So let's start with variable 1.

00:03:12

Looking at variable 1, it seems that the GLM produced all 1.0 factors for the variable,

00:03:20

But the one way result showing an a lower factor for level one and a higher factor for level 3.

00:03:29

But when we look at the validation results on the holdout sample, it looks like the model is fitting the actual results very closely.

00:03:38

So because of this, I'm going to include variable one in the model.

00:03:43

Going to variable 2.

00:03:46

I like that I can see that the GLM result shows the same directionality as the one-way result.

00:03:55

both of the lines show a decreased factor for level 2.

00:04:02

This might be a little bit lower than what the one-way result shows, because maybe there's correlation with another variable that one-way result can't quite capture.

00:04:13

So I'm feeling confident with this graph.

00:04:15

Let's look at the second one.

00:04:17

And here, again, we see that the model results very closely follow the actual results, which suggests that the model is predicting severity well.

00:04:29

So I'm also going to include variable 2 in the results in the model.

00:04:36

Lastly, let's look at variable 3.

00:04:39

So it looks like the one-way result is suggesting a 1.0 and a 1.0.

00:04:45

factor, but then the GLM result is showing a decrease factor for Level 2.

00:04:51

They're quite close together, so I'm not worried about this graph yet.

00:04:56

But looking at the second graph, it seems like the actual and modeled results are differing quite a bit.

00:05:04

We can see that for Level 2, the actual results suggest an increase to severity, but the model results show a decrease.

00:05:15

The results of this holdout implies some overfitting.

00:05:19

Thus, I would exclude variable 3 from the results.

00:05:26

Now I'm going to write my solution.

00:05:39

Hi, I'm the grader for this question.

00:05:41

This is a 1.5 point question asking the candidates.

00:05:47

Opinion on whether that should be variable should be included.

00:05:51

So we as a grader, I would be looking for full explanations for each of the variables and each explanation would be worth half a point.

00:06:02

So what I would want to see in the explanation is reference to both charts for each variable, commenting on the predictive value of the variable as well as the model fit for that variable.

00:06:17

So the candidate has responded to include variables 1 and 2 and exclude variable 3.

00:06:25

The candidate also made reference to the predictive values for each of these and the model fit as well.

00:06:32

The candidate was able to correctly determine that variable 2 should be included and variable 3 should be excluded, but incorrectly determined that variable 1 should be included.

00:06:47

They referenced the chart for variable one saying that the model had a good fit, which is accurate.

00:06:55

Where there was a mistake was noting that the 1.0 factor produced no predictive value, and so the conclusion was wrong because that would mean that you should not include variable one.

00:07:13

So the solutions for variable 2 and three are correct.

00:07:16

Based on the charts, variable 2 should be included because it has predictive value and good model fit.

00:07:24

Variable 3 does not have good model fit.

00:07:28

And so for those reasons, this candidate would score one point out of the 1.5 total points.