

Feedback — Quiz 4 ****Please Note: No Grace Period**** [Help](#)

Thank you. Your submission for this quiz was received.

You submitted this quiz on **Sun 28 Dec 2014 10:48 AM PST**. You got a score of **6.00** out of **6.00**.

Question 1

Consider the space shuttle data `?shuttle` in the `MASS` library. Consider modeling the use of the autolander as the outcome (variable name `use`). Fit a logistic regression model with autolander (variable `auto`) use (labeled as "auto" 1) versus not (0) as predicted by wind sign (variable `wind`). Give the estimated odds ratio for autolander use comparing head winds, labeled as "head" in the variable `headwind` (numerator) to tail winds (denominator).

Your Answer	Score	Explanation
<input type="radio"/> 0.031		
<input type="radio"/> -0.031		
<input checked="" type="radio"/> 0.969	✓ 1.00	
<input type="radio"/> 1.327		
Total	1.00 / 1.00	

Question 2

Consider the previous problem. Give the estimated odds ratio for autolander use comparing head winds (numerator) to tail winds (denominator) adjusting for wind strength from the variable `magn`.

Your Answer	Score	Explanation
<input type="radio"/> 1.485		
<input type="radio"/> 0.684		
<input type="radio"/> 1.00		
<input checked="" type="radio"/> 0.969	✓ 1.00	
Total	1.00 / 1.00	

Question 3

If you fit a logistic regression model to a binary variable, for example use of the autolander, then fit a logistic regression model for one minus the outcome (not using the autolander) what happens to the coefficients?

Your Answer	Score	Explanation
<input type="radio"/> The coefficients change in a non-linear fashion.		
<input checked="" type="radio"/> The coefficients reverse their signs.	✓ 1.00	
<input type="radio"/> The coefficients get inverted (one over their previous value).		
<input type="radio"/> The intercept changes sign, but the other coefficients don't.		
Total	1.00 / 1.00	

Question 4

Consider the insect spray data `InsectSprays`. Fit a Poisson model using spray as a factor level. Report the estimated relative rate comparing spray A (numerator) to spray B (denominator).

Your Answer	Score	Explanation
<input type="radio"/> 0.136		
<input type="radio"/> 0.321		
<input checked="" type="radio"/> 0.9457	✓ 1.00	
<input type="radio"/> -0.056		
Total	1.00 / 1.00	

Question 5

Consider a Poisson glm with an offset, t . So, for example, a model of the form `glm(count ~ x + offset(t), family = poisson)` where x is a factor variable comparing a treatment (1) to a control (0) and t is the natural log of a monitoring time. What is impact of the coefficient for x if we fit the model `glm(count ~ x + offset(t2), family = poisson)` where `t2 <- log(10) + t`? In other words, what happens to the coefficients if we change the units of the offset variable. (Note, adding $\log(10)$ on the log scale is multiplying by 10 on the original scale.)

Your Answer	Score	Explanation
<input type="radio"/> The coefficient estimate is multiplied by 10.		
<input type="radio"/> The coefficient is subtracted by $\log(10)$.		
<input type="radio"/> The coefficient estimate is divided by 10.		
<input checked="" type="radio"/> The coefficient estimate is unchanged	✓ 1.00	
Total	1.00 / 1.00	

Question 6

Consider the data

```
x <- -5:5  
y <- c(5.12, 3.93, 2.67, 1.87, 0.52, 0.08, 0.93, 2.05, 2.54, 3.87, 4.97)
```

Using a knot point at 0, fit a linear model that looks like a hockey stick with two lines meeting at $x=0$. Include an intercept term, x and the knot point term. What is the estimated slope of the line after 0?

Your Answer	Score	Explanation
<input type="radio"/> 2.037		
<input type="radio"/> -0.183		
<input checked="" type="radio"/> 1.013	✓ 1.00	
<input type="radio"/> -1.024		
Total	1.00 / 1.00	