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## The "Secret Sauce" of Machine Learning - Quiz

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### Question 1

1.0/1.0 point (graded)

In what sense do we mean estimation "overfits" relative to prediction?

☒ a. OLS minimizes the in-sample loss ✓

☐ b. OLS minimizes the out-of-sample loss

☐ c. OLS is low dimensional

☐ d. OLS is high dimensional

### Explanation

By construction, the OLS estimator minimizes the MSE in the sample. That is, it minimizes the distance between the predicted and observed outcomes. So by construction, OLS minimizes the in-sample loss and therefore maximizes the in-sample fit. On the other hand, prediction aims to minimize the out-of-sample loss and maximize the out-of-sample fit, and will thus correct for overfitting.

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## Question 2

1/1 point (graded)

Stata and R report the adjusted R squared. What is the "adjustment" for? (Select all that apply)

- ☒ a. It corrects for overfitting.
- ☐ b. It corrects for the high variance.
- ☐ c. It corrects for the fact R-squared is biased.
- ☒ d. It corrects the R-squared, by penalizing the regression for adding more variables.



### Explanation

The adjusted R squared corrects for the fact that, by construction, OLS overfits. It is a function of the ratio of the number of observations to the number of variables, so it penalizes you for adding variables. While the R squared will always increase when adding variables, the adjusted R square may increase or decrease depending on whether the gain in the accuracy of prediction is larger or smaller than the penalty for adding one more variable.

Regressions, and  
Omitted Variable Bias

▼ Module 11: Intro to  
Machine Learning and  
Data Visualization

Machine Learning I  
due Dec 12, 2016 05:00 IST



Machine Learning II  
due Dec 12, 2016 05:00 IST



Visualizing Data  
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► Module 12:  
Endogeneity,  
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✓ Correct (1/1 point)

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