Model Validation

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- We have already seen one way of validating a model
  - GOODNESS OF FIT!
- But goodness of fit relies on measuring the performance of the model on the data you used to build the model in the first place

Validation by Predicting New Values

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- Step 2. Predict the dependent values of unused data using the fit model

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Validation by Predicting New Values

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- Testing data for validating the model performance
- We can calculate the R-squared values of the two data sets and compare them

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  - When looking at NBA Elo data, our training set could have all play off games vs. the test set, with an 80/20 split
- How could this impact our model's performance?
- What is a viable alternative? We don't want to get rid of training and testing sets!

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- So not only are we validating the model multiple times, but with unique training and testing sets every time

k-Fold Cross Validation

1. Shuffle the data randomly
2. Split the data into k groups
3. For each unique group:
    a. Take the group as test data set
    b. Combine the remaining groups as training sets
    c. Fit the model on the training set and evaluate it on the test set
    d. Record the evaluation score and discard the model

- We can summarize the model using all evaluation scores recorded

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- 1 time for testing and k-1 times for training