1.   Linear Regression had a r^2 value of .52, while the decision tree regression had a r^2 value of .58.The higher the r^2, the better the model. Since the decision tree regression had a higher r^2, this indicates that it has a higher quality when predicting the outcome and is better than the model because it has a higher percentage of variance explained. Decision tree regression is the model that should be selected when trying to predict the median value of a home in Boston.

2.    For Linear regression, the first prediction of the median value was 23.615, the second prediction of the median value was 23.685. For Decision tree regression, the first prediction of the median value was 24.000 and the second prediction of the median value was 23.5. As previously stated, the decision tree regression model would be considered more accurate due to it having a higher r^2 than linear regression, so that would mean that the predictions of decision tree regression are more accurate. However, the predictions were similar. This was not unexpecting because the r^2 score of the models were only 6 tenths away, this indicates that the explained variance of each model was similar.

3.   After conducting k-fold cross validation for both models, linear regression had an average explained variance score of .547, decision tree regression had an average explained variance score of .545. The scores are nearly identical; however, this was surprising to me. Decision tree regression had a higher r^2 than linear regression without cross validation. However, when cross validation was utilized, decision tree regression ended up having the score. What possibly could have happened is that training and testing split displayed bias sampling biased towards decision tree regression. The cross-validation score is more accurate since each set of the data is partitioned as training to avoid sampling bias. This means the decision tree regression is the higher quality model and should be selected as the model over linear regression when trying to predict the median value of a home in Boston.