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Chapter 5 in our R book begins exploring approaches and validation methods for our models. Our models can fit 1 of two types; supervised or unsupervised. Supervised learning is taking information from a training set and using that to find the information we are looking for. As opposed to unsupervised learning which has no inclination into what kind of information we may get, but it tries to go through and glean some insight. Some problems that data scientist try to solve are classification and scoring problems each with approaches to solve them, some approaches overlapping between the two.

After approaching our problem and constructing our model, we need to evaluate our models. There are number of ways to do this but a quick look is the confusion matrix, which lays out true positives and negatives, and false positives and negatives. With the confusion matrix we can get measurements, some common ones are accuracy, precision, recall/sensitivity, F1, and specificity each giving us different information. These work well with classification models. Scoring models have values associated with them so we use different evaluation techniques like root mean square error, determination coefficients (, and correlation. Probability, ranking, and cluster models also have their own evaluations but I won’t go into those.

Lastly, our models are constructed from training sets and tested on testing sets which is from the data set itself. We need to make sure that once we apply our model outside that one specific data set that our model is still a good one. We can do this a few different ways but the most common one’s, to someone who has done some statistics, would be Hypothesis Testing and Confidence Intervals. These are not the best ways, but they are easy to do and quick. As has been the theme throughout this chapter, which presented with a problem, one must choose the approach that they think is the most appropriate as well as the evaluations they feel strongly validates their model.