PS10

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1 Model evaluation

Model evaluation:
Tree model
Sensitivity: .9461
Specificity: .5888
Accuracy: .8606

Logit model
Sensitivity: .9568
Specificity: .4804
Accuracy: .8428

Neural net model
Sensitivity: .9354
Specificity: .6055
Accuracy: .8564

Naive Bayes
Sensitivity: .8991
Specificity: .5997
Accuracy: .8274

KNN
Accuracy: .8454
Sensitivity: .9243
Specificity: .5946

SVM
Accuracy: .8557
Sensitivity: .9425
Specificity: .5799

Of the models tested, the tree model had the highest accuracy. The logit model had the highest sensitivity, and the neural net model has the highest specificity.

Thus, if we wanted a model that created the least amount of false positives, we should use the neural net. If we wanted a model that created the least amount of false positves, we should use the logit. If false positives and false negatives are equally bad in our data, we should opt for the tree. I will also note that the neural net appeared to have the best tradeoff of the three measures.

Table 1: Model Parameters

Model	**Parameter 1**	**Parameter 2**	**Parameter 3**
	minsplit	minbucket	cp
Tree	11	18	.00542
	λ	α	
Logit	1.37	.196	NA
	Size	Decay	Max Iterations
Neural Net	10	.487	1000
	K		
KNN	29		
	kernel	cost	γ
SVM	radial	1	.5