Confusion Matrix

To predict which customers will use any tool or no tool at all we used a neural network trained on the April and May billing data and customer information from the adoption data. The neural network was then tested on the June billing data. Our neural network had 7566 true positives, accurately predicting customers that would use the tools. Our neural network also had 24060 true negatives, accurately predicting the customers that would not use the tools. Our neural network had 8287 false positives, predicting that the customer would use the tools when they actually did not. And, our neural network had 7201 false negatives, predicting that a customer would not use the tools when they actually did. This amounts to 67.13% accuracy, 47.73% precision, 51.24% recall, and 49.42% F1 score.

To predict which tools customer are going to we estimated three separate models. For the visualize tool, a logistic regression model had the best performance. It predicted that all would use visualize, resulting in 2563 false positives and 10,784 true positives. This results in an accuracy of 80.79%, precision of 80.79%, 100% recall, and 89.38% F1 score. For the alert tool we used a decision tree to predict whether or not a customer would use alert. There were 9299 true negatives, 605 true positives, 1448 false positives, and 1995 false negatives. This equates to 74.2% accuracy, 29.47% precision, 23.27% recall, and 26.00% F1 score. For the report tool we also used a decision tree to predict customer use. There were 562 true positives, 9618 true negatives, 1323 false positives, and 1844 false negatives, which means 76.27% accuracy, 29.81% precision, 23.36% recall, and 26.19% F1 score.